NATIONAL PETROLEUM NEWS

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Supply Houses And Oil Companies Join To Put Industry On Parade

Staff Special
TULSA, Oct. 8

THE jars that were used on the Drake well in 1859 looked out of the glass case wherein they reposed and remarked to the drill stem used in drilling the first dry hole in West Virginia—back in 1844:

"Brother, they sure have changed a lot since our day."

And they have. It requires just such an event as the International Petroleum Exposition and Congress to bring it out.

For the first time in its lusty lifetime the oil industry and its allied equipment lines, third largest in magnitude in the country, went on dress parade.

Fittingly enough, Tulsa, looked upon as the nation's oil center, was the scene.

The clanking and groaning of a rotary rig making hole, heretofore a sound of industry unfamiliar to the average citizen, competed with the blaring of an exposition band for precedence on the eardrum. Its crew, ordinarily working in solitude, elbowed their way through a fringe of spectators.

Derricks All Dressed Up

Derrick tops that usually stand like sentinels on the horizon were festooned in the banners of convention attire and illuminated at night with many colored bulbs. The patient exhaust of a pumping power for a lease was drowned by the cry of the soft drink vender.

The men in the industry themselves were surprised at the magnitude of the display when all the apparatus and working equipment of the industry, its field methods and refinery practice and products after weeks of preparation, were finally brought together on three acres or so of ground in the neighborhood of Convention Hall. For the public it was even more of an astounding exhibition.

Under the auspices of the International Petroleum Exposition and Congress about 200 supply and equipment manufacturers and oil companies combined to make the week of Oct. 8 to 14 a period Tulsa will long remember. Plans have already been inaugurated to make such an exposition an annual affair.

It is hard to conceive of a piece of equipment or material used in connection with the producing and manufacturing of oil products that was not to be seen on disply, from the lumbering oil field tractors weighing tons to specimens of fossil life in oil sands visible to the visitor only under a compound microscope.

Several associations connected with the oil business are holding meetings at Tulsa this week as a part of the general congress. Their programs include the presentation of reports, technical papers and so on that will fill a considerable part of the week. There are representatives present from several foreign countries.

The city of Tulsa has done its part to make this gathering of the Consolidated oil industry a success by decorating its streets and buildings in gala attire. Its citizens have opened their homes to visitors who are unable to secure accommodations at hotels. Trains reaching Tulsa in the morning put on extra pullmans to handle the travel.

Visitors from the east with newspaper stories of martial law in Tulsa county fresh in their minds, looked, in vain for the national guardsmen, Governor Walton sent in some weeks ago. A few days ago the governor took the few remaining troops out, although martial law has not yet been lifted by official proclamation. The only signs of armed authority are an occasional Tulsa policeman on the streets or exposition grounds.

Of course, there is much interest in the several meetings being held by various associations and the addresses that are being made, but after all equipment is the big end of the show. There has never before been assembled so vast an array of the mechanical side of the oil and gas industry.

A Three Million Dollar Show

A little guessing upon the value of the equipment displayed and the costs incidental to getting it here has led to the opinion that this can be called a three million dollar show without exaggeration. Two hundred exhibitors, a few more or less, occupy 125,000 square feet of space.

With the exception of a few hot dog stands and synthetic orange juice parlors, all are filled with the products of the many manufacturers represented.

Here are exemplified all known methods of putting a hole into the ground for oil or gas. The rotary people are showing the industry just how their tools work, two of them even waiving the customary offset distance and racing down hundreds of feet of imaginary footage. The cable tool folks keep steam up all the time and one company is actually making hole. This well is known as Chicken Farm No. 1 and the companies which joined in rigging up expect to keep drilling as long as the exposition is in progress. A core drill is fully rigged up and is demonstrating the advantages of securing accurate samples of formations.

Down long aisles under steel-roofed buildings to the southeast and north of Convention Hall, the visitor to the exposition passes the scores of display spaces. Every exhibitor is a good showman and as he adds a friendly greeting to the attractiveness of his equipment wares, is certain of plenty of visitors. Even some of the Indian visitors who have never heretofore displayed any interest in the oil business outside of that which attached to their royalty checks, are seen exhibiting real curiosity in the machinery and tools.

Bars and Tenor Engines

Naturally, it is anything but a quiet place. On one hand you see a large installation of mammoth gas engines going full blast, and nearby will be smaller ones lifting their voices in the chorus. A tractor will be telling its story and somebody's steam drilling engine will puff away in a more subdued tone. Everything is in action that is built to move. Many of the exhibits, small enough to install in a booth, are operated electrically. This exposition is a fine thing for the local electric company.

King Petroleum, the monarch who started to show off properly, asserted he was a true king in that he didn't know much about the business of his realm but that he expected to learn during the week and that he knew of no better place to get an adequate idea of what it is all about. The same is true in mild degree even of many oil producers.

Never before have they had a chance to see displayed everything that is manufactured for the purpose of adding to their efficiency. Some new equipment is here displayed for the first time and in a few cases this is the place it is being introduced prior to its sale through distributors.

The large supply companies which have stores throughout the country and carry all tools necessary to the production of oil, are occupying extensive space, as are others manufacturing a single line such as gas engines and compressors. There is a host of others showing patented specialties whose exhibits are housed in one booth.

Market Talk is Forgotten

Not much time is spent around the exposition in discussing the "situation." The price of oil and trend of the market have been shoved into the background and the production men are busy hearing stories of what this tool and that one will do and how much money it will save. Many of the companies

are represented by their presidents and general managers who figuratively take off their coats and get down to the business of showing the production men the service they can receive.

The space directly back of the convention hall has been given over to scientific and technical branches of the industry. Here the geologist and refiner hold forth supreme. In an area 100 by 160 feet, all under roof, a remarkable collection of exhibits has been arranged so that even the layman visitor is able to gain a clear idea of the activities of technical men in the industry.

So much interest has been displayed in the scientific exhibits that added impetus has been given to a movement already on foot to make this a permanent exhibit in Tulsa, maintained by technical societies and government bureaus, and added to from time to time to keep pace with the industry.

From a historic point of view and from the standpoint of comparison with present day drilling methods, the outstanding feature of this section of the exposition is the old drilling tools exhibited, particularly those used by Col. Drake in his famous pioneer well of '59. These relics occupy the place of honor in the center of the museum. Second in interest are the tools used in drilling the first well in the Mid-Continent field, which was drilled by Thomas Galey near Neodesha, Kan. The list of societies and organizations taking part in and contributing to the scientific exhibits reads like a list of "who's who" in engineering, including as it does all major technical organizations whose members have to do with the oil industry. They are:

American Association of Engineers, American Association of Petroleum Geologists, American Chemical Society, American Institute of Electrical Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, Technical Club of Oklahoma, Tulsa Geological Society, United States Bureau of Foreign and Domestic Commerce, United States Bureau of Mines, and United States Geological Survey.

The Bureau of Mines has an extensive exhibit, showing results of its work in studying engineering problems in various fields, and illustrated with a large number of maps and charts. It has on display the peg model of Tonkawa field made when activity there was at its height, which gives an accurate picture of sub-surface conditions there as revealed by well logs. The bureau has a number of slides of microscopic fossils from well cuttings arranged so that visitors may look upon them through a powerful microscope.

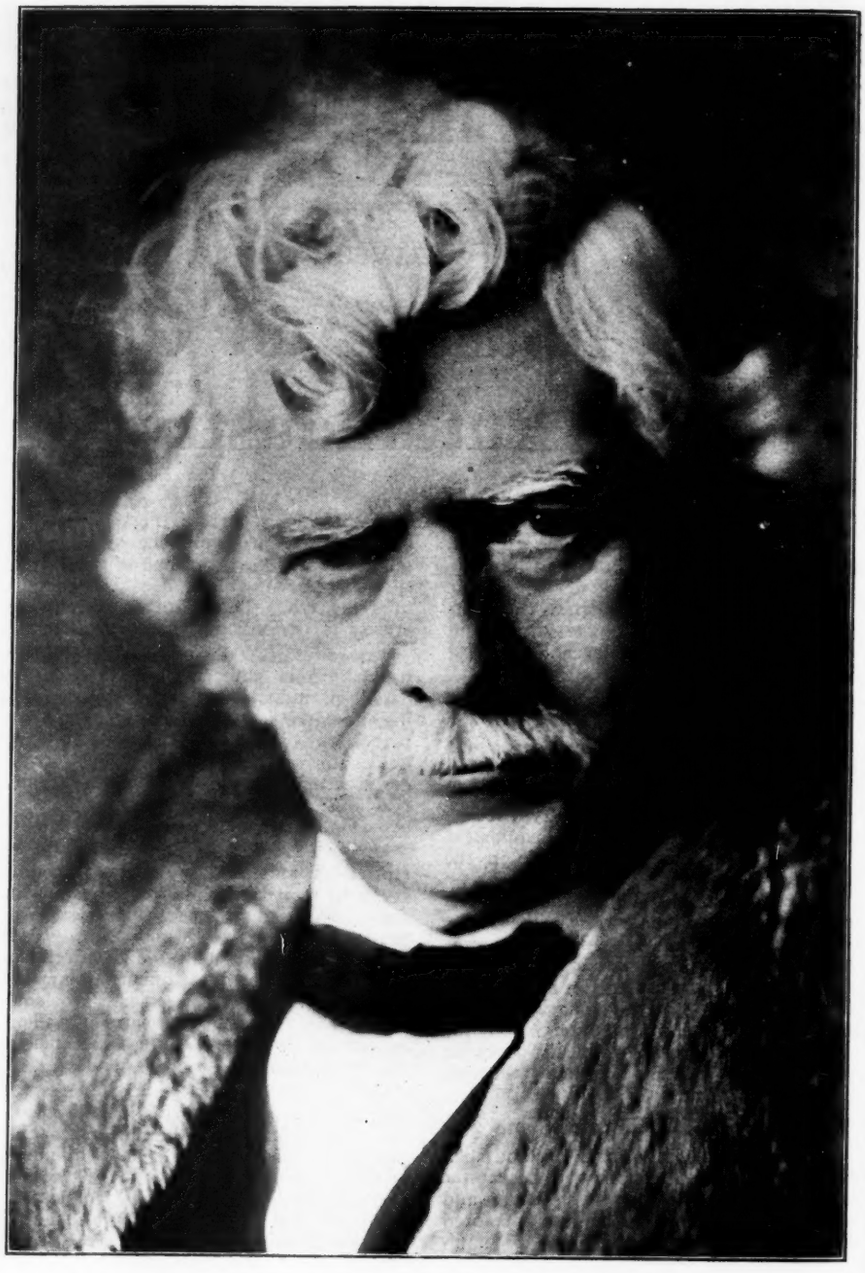
Under the powerful magnifying glass they tell to the trained eye of the geologist their story of bygone eras.

Another interesting exhibit placed by the Bureau of Mines is a collection of crude oil samples, each bottle labelled with the gravity of the crude and the locality from which it came. Every production field in the world is represented in this collection.

Other geological exhibits include numerous samples of oil sands and cores taken from drilling wells, together with a valuable collection of maps, cross-sections and charts of famous oil fields and structures. Among interesting maps is a preliminary showing of the geological map of Oklahoma now in course of preparation by the geological survey in collaboration with geologists of the state.

This preliminary map was prepared by Sidney Powers, chief geologist of the Amerada Petroleum Corp. J. A. Udden, formerly chief geologist of the Sinclair Oil & Gas Co., has been the moving spirit in the geological exhibit, and has worked hard for its success.

Further preceedings and papers read at the International Petroleum Exposition and Congress will be found on pages 26 to 32H.



King Petroleum

He is Judge S. H. King of Tulsa, is a native of Virginia and recalls the excitement attendant upon the news of the drilling of the Drake well in Pennsylvania in 1859. Judge King, who is 79 years old, is a lawyer of the old southern school. He practiced in Mississippi and St. Louis before coming to Oklahoma 14 years ago. He first located at Pawhuska and became associated with the tribal attorneys for the Osages when the oil development in that territory was in its infancy.

Like others of his profession he saw that Tulsa was to become the state's real oil center, so moved to that city when it had only 2500 inhabitants. Judge King has been closely associated with the oil business ever since he arrived in Oklahoma. He is widely known among members of the industry—both old timers and the men now active in the development of the Mid-Continent field.

Sinclair Refining Co. has a prominent exhibit showing in miniature the progress of oil from the drilling well to the automobile, each step shown by accurate models of the various processes.

A model refinery laboratory in which various oil tests are constantly being made is another outstanding feature of the scientific division. This exhibit was placed by Tidal, Cosden, and Marland refining companies in co-operation. A. L. Rose of the Tidal Oil Co. is exhibiting a model drilling well which has been a center of interest.

THIS WEEK'S OIL NEWS SUMMARIZED

Production

(Production News, pp. 65-80)

DECLINING production in practically all fields was the story of the week. Oklahoma showed the greatest decline, daily average production falling nearly 10 000 barrels to a daily average of 404,430.

Burbank and Bristow accounted for 5700 barrels of this decline, and much to the surprise of everybody, Tonkawa showed a spurt and gained nearly 1000 barrels through the completion of 13 producers. Kansas showed a slight increase which is attributed more to an accurate re-checking of figures than to actual production brought in.

End of the month figures showed that the average daily production for Oklahoma during September was 80,707 barrels a day below the daily average or July, the daily average for September being 432,017 barrels as against 512,724 barrels for July.

Operations in the Mid-Continent producing fields right now are nearer to an absolute standstill than they have been in years.

The general opinion that the Prairie would relax the proration following the cut in the posted price of crude has not been verified so far. There has been no general move by the Prairie to take more oil, although in line with its announcement, it is taking more from some leases with old settled production.

California production fell off about 8000 barrels a day during the week while the record of the Shreveport territory was said to be the lowest in many years. Smackover had only 11 completions with initial production of 1135 barrels.

Financial

(Financial News, pp. 108-110)

THE short interests in industrial stocks were routed in the middle of the week and these shares including the oils made the biggest gains Wednesday of any day in recent weeks. Some of the oil shares sagged after the early spurt but most of them were able to maintain the higher values. Several showed rather handsome gains over the week.

The substantial Independent oil stocks as well as the Standard group were benefitted by the turn from selling to buying. An accumulation of leading issues is said to be under way and this may stimulate prices considerably.

Banking interests identified with Houston Oil are reported to be buying in this stock. Recent developments in Texas are said to have greatly enhanced the prospects of this company and only the recent depressed conditions in the oil industry have kept prices down to the present level. Cosden also has undergone good buying. California stocks were stronger, all those listed on the "big board" showing gains over the week. Associated Oil was the feature advancing to 108 for the old stock and 27 for the new after publication of the income account for the first half of the year which showed net profit of only a few cents a share below the dividend requirements for the entire year.

Of the Standard Oil group on the curb, the action of Prairie was the most conspicuous. It jumped from 156½ to 174 and the close of 170½ represented a net advance of 13½ points over the week. Pipe line stocks were irregular but shares of refining companies were strong.

Clay County Well Is Being Watched

FORT WORTH, Oct. 6.—Interest in Clay county is now centered around the Dunning Drilling Co's. No. 1 Hapgood, two miles northwest of the Gulf Production Co's. Worsham discovery well. The Hapgood well is now down around 3000 feet. The Gulf pay was entered between 3390 and 3400 feet.

Since the No. 2 of the Gulf, 2000 feet east of the discovery well, was abandoned several weeks ago, interest has turned to the test to the northwest.

The Gulf's wildcat on the Boddy, 10 miles north of Henrietta is drilling around 2000 feet. Also on the Boddy, but only a mile north of Henrietta, the Foster and Allen No. 1 is drilling around 500 feet. This will be a shallow test

S. O. Indiana Wins Fight

WASHINGTON, Oct. 9.—Standard Oil Co. of Indiana won the final round in its fight with the United States government for the recovery of damages caused by a collision on a railroad at Grand Rapids, Mich., which caused destruction by fire of the oil company's warehouse. Michigan courts gave the company judgment for $105,000. The United States Supreme Court yesterday refused to review the case application for which was filed by the Director General of Railroads.

Changes His Connection

JACKSON, MICH., Oct. 9.—A. J. Stevens, until recently president and general manager of the Stevens Grease & Oil Co., of Cleveland, O., and Kansas City, has become interested in the American Oil Corp. of this city, and will act in the capacity of special sales representative for the company.

Mr. Stevens brings to the American Oil Co Corp. 35 years of valuable experience during which time he has developed many specialties and special brands of greases for the jobbers of the country. Many of the private brands sold throughout the country were made under the personal supervision of Mr. Stevens and will be obtainable at his new connection.

Marketing

(Marketing News, pp. 97-107)

FIRMNESS in gasoline prices, the result of recent heavy buying, is given support by the Bureau of Mines statistics on refinery operation in August. Gasoline stocks were drawn on to the extent of 111,000,000 gallons that month and prospects are that the report for September will show that motor fuel stocks on Oct. 1 were below the billion gallon mark for the first time since last February. Drafts on stocks in September needed to be less than 54,000,000 gallons to accomplish this feat.

At the August rate of consumption, gasoline stocks Sept. 1 amounted to but 47 days' supply as against 54, Aug. 1 and 37, Sept. 1, 1922. Fewer refineries were operating in August, but the output of gasoline was greater than at any other time in the history of the oil industry. Record-breaking consumption in this country and a 50 per cent decline in gasoline imports from Mexico are the reasons for the great decline in motor fuel supplies.

After Oct. 1, if the situation follows the course usual in other years, stocks will accumulate again but it is doubtful whether the industry will be stampeded next year as it was this. It probably will become accustomed to 10-figure amounts in view of the constantly increasing demand for gasoline and the growing number of motors in operation.

Kerosene is strong east of the Mississippi river and steady in the southwest. Demands for a distillate for use in domestic heating plants, may cause some curtailment in the production of water white during the winter. This would tend to strengthen prices for kerosene. That prices at the refinery are firm is proved by the fact that no reduction occurred last week when Standard Oil Co. of Indiana cut tank wagon prices in 11 states.

Pennsylvania cylinder stocks have been in good demand and prices of steam refined and some filtered grades have advanced. Mid-Continent refiners expect improved markets for their neutrals and stocks as compounding for next year's automobile requirements is speeded up during the winter. Prices of their goods have held firmly to the higher level established a month ago.

Southwestern fuel oil has been comparatively weak and prices are soft.

EVANSTON, ILL., Oct. 8.—W. E. McCraw, formerly manager of the marine department of Vacuum Oil Co at Chicago, is now representing Valvoline Oil Co. in northern Indiana.

Judson Pratt, manager of the company's Cincinnati, O., office, has been ill for several weeks, but is now able to be back at his office, reports Robert Bruce White, salesmanager of the Valvoline Oil Co's. northwestern division.

Ask Appointment Of Experts To Hasten Dubbs Suit

Staff Special

KANSAS CITY, Oct. 6

THE Standard of Indiana interests have made a new move in the long-standing suit brought against that company by the Universal Oil Products Co. claiming damages for alleged infringement of the Dubbs patents by the Burton cracking process, for the purpose of bringing the case to a decision as soon as possible.

Their attorneys appeared in Federal Court here before Judge A. S. Van Valkenburgh Oct. 4 and introduced a motion asking the court to issue an order appointing three disinterested experts to carry on tests and pass on certain technical points in the controversy for both parties.

The Standard also asked that a certain definite number of days be alloted each party to the case to have such tests as they desire carried on by these experts; and that, upon the conclusion of these tests, the court order the hearing to proceed without interruption until the introduction of evidence is completed.

For the complainant Universal Oil Products Co. Senator James A. Reed argued against the granting by the court of such an order on the grounds that it would be difficult to find three properly qualified but unbiased experts to serve and also that the result of using the evidence of such experts would be to largely disqualify the great amount of evidence which has already been taken in the case.

Judge Van Valkenburgh took the motion under advisement but announced his intention of ruling on it in a few days.

The experts, of course, would be selected and appointed by Judge Van Valkenburgh and would have to be taken from the ranks of chemical engineers outside the active oil industry. Their expenses and the expense of carrying on such tests as they themselves or either party to the suit might wish, would be covered by the court calling on either party to deposit funds to cover the work as it progressed.

The Standard attorneys stated their use of this commission of experts would be to have an experimental Dubbs unit put up at Santa Maria, Cal., and tests conducted to bring out that the Dubbs process both would not do all that was claimed for it and also that all the equipment and apparatus described as part of the process was not necessary to accomplish certain results. What use the Universal Products Co. would make of the commission of experts of course has not been brought out as yet.

Judge Van Valkenburgh has stated his desire to bring the case to a conclusion as soon as possible with fairness to both parties. The case has been on his docket since Aug. 7, 1916, and by its nature has called for a great amount of time in taking expert testimony, examination of various plants using both processes and so on. Special Master Holmes Hall was appointed Nov. 25, 1921 and has heard the testimony since. Senator Reed came into the case as attorney for the Dubbs interests early in 1922.

The question has been much discussed in the industry generally as to what bearing on the cracking patent situation the outcome of this suit would have. The Universal Oil Products Co., owners of the Dubbs process, originally introduced in California to dehydrate cut oil, claim prior rights in the use of temperature and pressure on petroleum oils, regardless of the specific end to be accomplished by the use of temperature and pressure. Their bill of complaint asks first rights for the court to pass on the infringement of their patent rights by the Burton process and second for an accounting and damages from the Standard of Indiana in case infringement is upheld.

Damages would likely be collected from the Standard since it started to use the Burton process and also royalties in addition; and also the question would come up immediately as to similar penalties from other users of the Burton process and other cracking processes as well as that condensed under pressure.

As far as can be gathered from general discussion of the case, one phase at least of the Standard's defense has been that patent rights could not be upheld to such a general principal as the mere application of heat and pressure to oil to produce certain results and that their claim to rights to the Burton process comes through patents on apparatus and equipment.

The text of the order the Standard attorneys submitted as a part of their motion, which order they ask Judge Van Valkenburgh to issue, is as follows:

"An order having been entered herein on the 25th day of November, 1921, appointing a master before whom testimoney in this cause is to be taken, and it now appearing to the court upon motion of the defendant, and after hearing counsel for the respective parties, that many disputed questions of fact and operation have arisen between expert witnesses employed by the respective parties as to the operation of various oil treating apparatuses bearing upon the issues in this cause, and that it is desirable that the court and master, in passing upon these issues, hall have the benefit of the views of experts not connected with either party; and it further appearing to the court that, in the interests of keeping the record as short as possible and of expedition in the trial of this cause, it is desirable that time shall be fixed for the making of such tests as may be attended by said experts and that further evidence in this cause should be continuously taken it is:

"Ordered that the motion for the appointment of said experts be and it is hereby granted the court to appoint a commission of three disinterested experts to act under the instructions of the court and it is further,

"Ordered that either party may, upon depositing in court such amount of cash as the court may from time to time direct, have such commission present at and direct tests to be made by or on behalf of such party or at the request of such experts, such experts to testify as the court's witnesses at the hearing of this cause before the master, or by either party, and to be paid by the court from amounts deposited as above provided such fees and expenses as may be fixed by the court; all tests which defendant may choose to make in conjunction with such experts shall be made within— days after such experts shall have been designated by the court; and all such tests as plaintiff chooses to make shall be made within—days after the completion of the defendant's tests and it is further

"Ordered that, upon the termination of said tests, the hearings in this cause shall proceed before the master sitting continuously in Kansas City from day to day until completion as though such hearings were in open court, provided that the testimony of such witnesses who will not or cannot be compelled to appear before the master in Kansas City may be taken by deposition before the master, or, if he cannot attend, by any qualified officer."

Two North Texas Wells Stage Comeback

FORT WORTH, Oct. 6.—Two Stephens county wells, in their daily sensational producers but for months small pumpers, staged remarkable and unexpected comebacks this week.

The Humble's No. 1 Caton, which had been pumping only a few barrels daily, suddenly started flowing at the rate of 1000 barrels, the latter part of last week, blowing in as would a new producer just reaching the sand. Offsetting this well the Pender-Keel, a big flush producer, stopped producing altogether several months ago, and is still not producing.

On Thursday of the current week the Sun Co.'s No. 1 Stoker, three miles northeast of Breckenridge just as suddenly blew in, and had a flush 12-hour flow at the rate of 8000 barrels daily. On Saturday the production was reported at the rate of 4000 barrels daily.

The Miller Bros.' No. 1 Boyett, west edge of Stephens reported last week as an eastward extension of the Ibex deep pool was shot this week, with 120 quarts, and is making 350 barrels daily.

The new Acker well of C. O. Moore, in Callahan county, a short distance west of the Pioneer pool one of the 1922 sensations for the south part of the district, has produced an average of more than 600 barrels daily for the first 18 days, and is still flowing naturally.

New locations are being made around the two latter wells, and a certain amount of new drilling will be started.

Sale of a 40-acre tract in the newly opened North Clara pool for $208,000 featured the week's happenings in the Wichita Falls district. John O'Neil purchased the Clara tract from L. P. Hammond, who drilled the second well in the pool. There is only one producer on the 40 acres, this making around 300 barrels daily. This production is flush.

Archer county had another good week, despite continued market depression. The best new well was the Bridwell and Heydrick No. 1 Flora May, initial flow of 750 barrels, 1580 foot sand. On the Carter Bros. tract, joining the May on the east the Sunshine State completed a 450-barrel well, its No. 6 Carter Bros., and the No. 2 Mrs. J. H. Carter of Staley and Wynne is a 600-barrel producer.

More Efficiency And Lower Costs, Is Keynote of Convention

CHICAGO, Oct. 9

BETTER merchandizing" and "more efficiency"—these are the two big points which will be driven home to oil marketers the country over at the annual meeting of the National Petroleum Marketers Association at Milwaukee, Oct. 23-24-25.

These two big points will be driven home not only by a program confined almost entirely to them, but by the co-operation of the supply men and their exhibits. These last are being urged by President Nicholas, of the N. P. M. A., to tie their exhibits and their sales talks up in every way possible with the text of the program, for he says it's only by using the best o equipment in the most efficient manner that the Independent jobbers can protect a reasonable margin of profit in the next six months or year.

There will be two sessions each day one starting at 10:30 a. m. and the other at 1:30 p. m. Subjects have been assigned for discussion from the floor at each session and a number of experienced men in each subject have been asked to prepare themselves especially to lead the discussions—but no oratory is scheduled—it's the business meeting style of gathering inaugurated for the first time by the association at Kansas City a year and a half ago which has shown its value to the trade by the steadily increasing attendance at the sessions—larger attendance than ever before had at such meetings.

The election of officers is scheduled for 4:30 p. m. of the second day.

The business program as so far announced by President Nicholas follows:

Tuesday——Finance

Cost of building stations.
Economy of investment.
Fewer stations—bigger gallonage.
Economy of construction.
Economy of operation.
Keeping down expenses.

Wednesday—Advertising and Selling

Possibilities of advertising in oil marketing.
(a) Display advertising.
(b) Outdoor advertising.
(c) Newspaper and periodical advertising.
(d) Direct mail advertising.

Selling

(a) Constructive
(b) Destructive
Independent coupon exchange.

Thursday—The Future in Oil

Crude Oil Trends—world conditions and facts.
Refining trends—
(a) Improved methods.
(b) Distributing direct vs selling through jobber.
Marketing Trends—
(a) Spot buying vs marginal contracts.
(b) Forms of marginal contracts.
(c) Safeguarding marginal contracts.

President Nicholas has called on the supply men to advise him how the meeting and the exhibit space can be made more effective for the exhibitor and more valuable to the jobber attending.

A short talk will be given at every business meeting of the association on the value to the jobber of closely inspecting the exhibits.

A series of prizes will be given by the association to jobbers making purchases of equipment at the convention. The jobbers are being urged to hold up their buying until they can look over the display at the convention and then place their orders there.

Probably the last day of the convention the association will provide a first class auctioneer who will auction off to the assembled jobbers such of the equipment as is on exhibition and which the exhibitors cannot well return to their factories without considerable expense. The exhibitors will select the equipment they want put up and name a minimum price. This auction is not only expected to save the exhibitor some money but get greater interest in his display and possibly develop some bargains for the jobbers.

Don't Miss The Efficiency Oil Convention

THE biggest problem before the oil industry today is getting its costs down. It is the problem before all industries. The success with which this problem is met will determine very largely the public's final attitude politically toward the business.

This probem is just as much before the big companies, both in and out of the oil business, as before the small companies. It is every man's problem whether he runs one tank wagon or a thousand. And it can be met in only one way by either the big or little company, and that is the closest study of the company's business to cut out those things which are not absolutely necessary and to put forth still more intelligent and efficient sales effort.

No company has a monopoly on efficiency, and no company has a monopoly on inefficiency. In fact real efficiency is more of a problem in the big company than in the small one.

Realizing this big question before the oil industry, President Nicholas of the National Petroleum Marketers Association has very fittingly dedicated the coming convention of that association—the last week of this month—to it. Every jobber from everywhere in the country should be there. The more who are there the more good that can come from the meeting. The discussions will be led by men of experience in their subjects but those discussions will be open to every man there who thinks he has an idea which will beat down costs and get more business.

While the smaller oil companies may seem to be hurt the quickest and the most by inefficiency, it's within their power to correct those errors of management much sooner and with less exertion than the big companies can. The inertia of a large company is simply tremendous. It has broken down many a man who single handed tried to buck the tide of rising costs.

The small oil jobber can examine his costs at first hand. He can go out to the stable, to the garage, to the warehouse and see for himself just what is going on and while right there on the ground apply the remedy to any leaks and get them effective at once.

But the big company official is terribly handicapped. He has to study columns of figures, and charts and curves prepared by some one else who got the figures from still others who read them in the reports from still other employes who may have seen the conditions first hand, or maybe in turn got them from still others. Ideas that have to be relayed through many minds and hands generally suffer in their transmittal; just as the remedies to correct the evils lose in effectiveness in going back to where the evil exists.

And then there is the time that is lost. You, the small jobber can step out to your garage NOW and get immediate action. But a big company official must wait days or weeks or even months for reports to come through and be digested and then wait an equally long time while his remedy travels back and is applied.

We in this country have been too prone to look at the big company with its costs experts and tabulating machines, etc., from which figures by the bushel come, as thereby, just through the possession of all these things, being efficient. But big business to its sorrow has found out that intead of meaning efficiency all these things are simply an effort to find the leaks and stop them and that they don't always work by any means.

The mere setting up of all this machinery is a cost, even a stupendous cost in itself. This extra cost is supposed to be more than offset by the savings they accomplish but even such a manufacturing wizard as Henry Ford found several years ago that it wasn't and, as he expressed it, he threw out a few tons of the stuff which was interesting but didn't make his cars any cheaper.

No expense that is greater than is absolutely necessary to accomplish the desired end is justified. When you go beyond that you get into frills and waste which some day

wi'l floor you. Everyone likes to accumulate a few frills. It's human nature and the more people you have in an establishment the more fril s will be accumulated and as a frill begets another frill, the frill will increase in greater proportion than the number of persons emp'oyed. That is what the big companies are up aga nst and they know it. Some Independent jobbers because their business was small thought they couldn't have fril s. They were harder to see in a way because they were closer to him. But they are in most everyone's business.

Competition in the oil marketing business is going to be more k'en in the next year or so than for many years because there are so many in it of varying types and financ'al condition to fight for the business. Conservative opinion is that there is more marketing investment per ga lon of business now than ever before. Many newcomers came in on a shoe string. Some old companies, even with the wide marg'ns of the past summer, haven't been able to maintain a profitable portion of the gallonage and are suffering. The man who is hard up for money is going to be harder competition than the man who isn't. He may, by sheer necessity be the most intell'gent competition but the chances are he will be the least intelligent and the most destructive in his fight for life.

There are a lot of men in the marketing of oil who will have to fight mighty hard and intelligent y to survive the prospective period of hot competition. They will somewhat set the pace in the type of competition the industry will have. They will be the first to cut prices and the worst in price cutting because it wi l look like the easiest way. So it's a certainty, practically, that the marketers are in for a real fight for the chances of conditions arising again as came this past summer and causing a low refinery market while a h'gh tank wagon market obtains are practically nil.

Don't wait for the Milwaukee meeting to start an intensive study of your business to see where you can cut costs but don't stay away from that meeting because you get so immersed in the money saving program. The other man in a neighboring state may have just the idea you are looking for that will repay you your expenses to the meeting and then some. And in fair play, you may have just the idea your brother marketer needs.

So come to the meeting and make it three days of hard work to see how the Independent oil marketer can get his costs down and his gallonage up.—W. C. P.

How Supply Men Can Help Economy Program

THE oil marketer's investment is most'y equipment, tanks, wagons, pumps, etc. He has only a nominal amount in real estate. The supply man at the National Petroleum Marketers Convent'on and those who are advertising in **National Petroleum News** are all seasoned men who have given years of study to the problems of the oil marketer. His success depends on the marketer so well operating his present equipment that he will increase his business and profits so that he can buy more equipment. These supply men have built big businesses by he ping the marketer to success and they will build still larger ones by increasing that marketer's success.

There hasn't been a time in a half dozen or more years when the oil marketer shou d study equipment and its use as carefully as now. New styles and ideas are being constantly developed by the supply men. Each new idea offers the jobber a chance for more business and greater profits. Where a marketer will find a particular idea in equipment that will help him to greater business and more profit he can only determine by careful searching of all that is offered What may fit one man's business may not fit another's.

Equipment men are rea'izing the demand on the marketing end of the industry for greater efficiency and their advertising in **National Petroleum News** as well as their exhibits at the N. P. M. A. convention show it. In most every issue of this paper the marketer will find some new idea of equipment or product which will he'p his business and we know that several equipment men will make their first showing of some entirely new pieces of equipment at the Milwaukee convention.

A careful study of this paper's advertising and of the exhibits at the convention by every oil marketer should materially aid the industry in achieving that greater economy and increased business that it desires.—W. C. P.

Standard Cuts California Crude 2 To 28 Cents A Barrel

Staff Special

CLEVELAND, Oct. 9

STANDARD Oil Co. of California today cut all but three heavy grades of California crude 2 to 28 cents a barrel. The reduction was made progressively by making the differential between the various grades 1 cent instead o three cents as has existed since the last reduction in California of Aug. 1. The new and o'd prices, applicable to all California fields, follow:

	New Price	Old Price
14-19.9 degrees	$.60	$.60
20-20.9 "	.61	.61
21-21.9 "	.62	.62
22-22.9 "	.63	.65
23-23.9 "	.64	.68
24-24.9 "	.65	.71
25-25.9 "	.66	.74
26-26.9 "	.67	.77
27-27.9 "	.68	.80
28-28.9 "	.69	.83
29-29.9 "	.70	.86
30-30.9 "	.71	.89
31-31.9 "	.72	.92
32-32.9 "	.73	.95
33-33.9 "	.74	.98
34-34.9 "	.75	1.01
35 and higher	.76	1.04

The company issued this statement:

"The reduction in price is due to the continued overproduction of oil in southern California, the bringing in of new production, notably in the Torrance field, and a seasonal diminution in the consumption of petroleum products. The last reduction of the company offered prices for crude oil was on Aug. 1. Since that date there have been two reductions in the price of gasoline."

The price reduction reflects the continued stress on storage facilities in southern California. The strength of the fuel oil grades of crude is shown in the fact that prices of heavy crudes were not changed.

The California reduction has been expected for some time despite repeated expressions of opinion by productions authorities that the peak of California light oil productions was passed some time ago. The three leading lig ht oil fields—Santa Fe Springs, Long Beach, and Huntington Beach—have been holding closely to a level of 650,000 barrels daily average for weeks and Torrance has been taking on a more important air although production there is still at a low figure.

The reduction is another blow for Mid-Continent production which under the new Prairie schedule had some chance of regaining at least part of the markets it lost early this year among Atlantic Seaboard refiners.

Crude of 26 gravity which constituted a bulk of the movement from California to Atlantic coast refineries is now quoted at 67 cents at the well. With 22 cents gathering and loading charges and 90 cents to $1.05 tanker charges and canal tolls, California oil may be laid down on the Atlantic seaboard at $1.77 to $1.94 a barrel according to how favorable tank ship charter rates the buying company may have obtained. The delivered price of the highest grade California oil would be but 9 cents a barrel more or $1.86 to $2.03.

Mid-Continent crude of less than 33 gravity costs 90 cents at the well, 10 cents brokerage, 20 cents gathering charges and a trunk line tariff of 76¾ cents a barrel or $1.96¾ delivered to the seaboard refiner. Crude of 33 to 39.9 gravity costs 40 cents a barrel more.

* * *

HOUSTON, Oct. 9.—Effective Oct. 8, Humble Oil & Refining Co. announced a new schedule of prices it would pay for crude in the Ranger and Burkburnett districts. New prices are:

Below 30	$ .90
30-32.9	1.10
33-35.9	1.20
36-38.9	1.35
39 and above	1.40

The Humble announced it would buy on this basis all oil produced and would purchase all oil held at credit balance for producers under the old proration plan. Humble has bought at the Prairie schedule since the cut in Mid-Continent crude Sept. 19 and the regrading by the Prairie. The new Humble schedule represents a cut on some grades and a 5-cent advance on 36-38.9 gravity crude and 20 cents on 39-39.9.

Gasoline Stocks Off 111,000,000 Gallons; Near Billion Mark

Staff Special

CLEVELAND, Oct. 9

HOPES that gasoline stocks would fall below the billion-gallon mark before winter when supplies for the next season start accumulating, rose above the horizon this week with the announcement by the Bureau of Mines that motor fuel inventories had declined more than 111,000,000 gallons during August. On Sept. 1 stocks stood at 1,053,856,221 gallons with one month of good consumption left before the usual autumn decline.

The effect of curtailment of refinery operations in August is evident in the bureau's report. Only 260 plants reported operating as against 282 in July but operations were at a higher rate, those in August operating at 78.4 per cent of rated capacity while those in July operated at 77.9 per cent.

Less crude oil was run in August, the daily average being 1 613 398 barrels as against 1,629,982 in July but the running of partly refined oils increased, advancing from 65.590 barrels a day in July to 74,704 in August.

Production of gasoline increased 1.89 per cent, the biggest gains being in the Atlantic coast, the Louisiana-Arkansas, and Rocky Mountain districts. Output of Oklahoma-Kansas refineries fell off 11.2 per cent from the July production.

Drafts on stocks in gallonage were heaviest in Oklahoma and Kansas but the bureau's statistics indicate that the Standard Oil Co. of Indiana also did considerable unloading in August. Heavy declines were made in the Indiana-Illinois and Rocky Mountain districts where this company is the predominating refiner by an enormous margin. California plants piled up more than 17,000,000 gallons. Stocks in the various districts changed as follows:

Declines in Stocks	
East Coast	15,799,000
Penn., W. Va. etc.	4,074,000
Indiana-Illinois	26,513,000
Oklahoma-Kansas	40,189.000
Texas	6,990,000
Wyoming-Colo.	25,624,000
Increase in Stocks	
Louisiana-Ark.	2,635,000
California	17,020,000
Net decrease	111,533,000

Indicated domestic consumption of gasoline in August was 692,185,610 gallons as against 674 019,467 in July and reached the highest figure in the history of the industry. Domestic consumption exceeded domestic production was 18 166.143 gallons. Exports fell off 5,000,000 gallons to 78 503,475 but imports declined more than 50 per cent to 10,201 260 gallons. Production of gasoline this year was 98 996 330 gallons or 18 per cent more than in August, 1922.

Increased domestic consumption and greater exports caused a 9.5 per cent decline in kerosene stocks during August. Production also was down 1 per cent from the July output. Only one district, Indiana-Illinois and nearby territory, reported an accumulation of kerosene supplies although five districts had greater production. Stocks amounting only to the current rate of monthly production in several districts, bear testimony to the soundness of the recent advance in prices in those districts and the firmness of kerosene throughout the country. Consumption amounted to 131,887,963 gallons and exports to 80,226,306.

Fuel and gas oil stocks increased during the month although production declined. Domestic consumption totaled 832,905,034 gallons and exports to 127,414,605. Stocks declined only in the Oklahoma-Kansas and Louisiana-Arkansas districts.

Productions of lubricating oils declined 7.1 per cent and stocks 2 per cent. Domestic consumption, however, fell off almost 2,000 000 gallons to 69,269,209 and exports more than a million to 22,530,546. The highest rate of decline in output was in Oklahoma and Kansas where Cosden, Marland and other plants were closed during part of August.

Throughput Of Crude And Other Oils During August (Barrels)

	East Coast (N.Y., Phila. and Baltim.	Penn., N.Y., E. Ohio and W. Va.	Ind., Ill., Ky., W. Ohio and Tenn.	Oklahoma and Kansas	Texas	Louisiana and Arkansas	Colorado and Wyoming	California	Total
Crude	10,791,898	1,848,227	4,387,687	4,948,516	8,115,369	4,041,463	2,447,026	3,505,221	50,015,347
Other Oils	780,465	53,512	157,849	407,425	455,507	78,034	599,069	90,828	2,315,8'1
Total	11,512,303	1,896,739	4,545,536	5,350,941	8,570,876	4,119,497	3,046,095	13,596,049	52,331,1'8
July	10,348,213	1,841,285	4,640,987	6,111,169	8,896,225	3,915,290	2,761,777	14,047,771	52,562,717
% Change	+11.3	+3.0	—2.0	—12.4	—3.6	+5.2	+10.3	—3.2	—.4

Gasoline Output And Stocks (Thousands Of Gallons)

Output									
August	134,454	27,802	89,068	93,206	101,678	39,921	53,656	109,165	648,954
July	109,465	26,539	92,099	104,833	97,455	35,379	49,927	121,212	636,912
% Change	+22.8	+4.7	—3.3	—11.2	+4.3	+12.8	+7.2	—9.9	+1.89
Stocks									
Sept. 1	210,484	21,078	132,307	201,983	124,133	90,129	120,133	153,605	1,053,856
Aug. 1	256,283	26,152	159,820	242,172	131,123	87,494	145,757	136,585	1,165,389
% Change	—6.6	—15.5	—16.6	—16.6	—5.3	+3.0	—17.0	+12.4	—9.5

Kerosene Output And Stocks (Thousands Of Gallons)

Output									
August	50,632	12,362	17,968	20,050	33,331	21,863	13,611	16,399	186,218
July	41,132	12,657	17,515	20,817	49,799	19,293	10,724	16,285	188,226
% Change	+23.1	—2.3	+2.6	—3.6	—33.0	+13.3	+26.0	+0.7	—1.0
Stocks									
Sept. 1	70,667	12,891	44,356	19,699	46,663	20,094	5,968	23,968	243,617
Aug. 1	77,722	16,156	39,638	20,160	54,883	26,149	7,311	27,436	269,459
% Change	—9.0	—20.2	+11.9	—2.2	—14.9	—23.1	—18.3	—12.6	—9.5

Fuel And Gas Oil Output And Stocks (Thousands Of Gallons)

Output									
August	216,468	17,267	57,318	92,513	176,887	74,020	52,505	323,676	1,010,652
July	203,957	15,217	53,979	104,983	172,071	74,812	48,417	379,802	1,053,247
% Change	+9.5	+13.5	+6.2	—11.8	+2.7	—1.0	+8.4	—14.7	—4.0
Stocks									
September 1	324,615	32,769	42,240	105,541	346,718	80,577	40,521	489,170	1,462,182
August 1	308,968	30,193	37,973	108,592	314,489	91,423	34,935	474,237	1,400,813
% Change	+5.0	+8.5	+11.2	—2.8	+10.2	—11.8	+15.9	+3.1	+4.3

Lubricating Oil Output And Stocks (Thousands Of Gallons)

Output									
August	25,918	14,319	8,747	5,058	21,764	2,463	1,917	7,072	87,261
July	24,702	13,670	9,084	7,419	27,520	2,347	1,727	7,488	93,960
% Change	+4.9	+4.7	—3.7	—31.8	—20.9	+4.9	+11.0	—5.5	—7.1
Stocks									
September 1	91,375	31,148	19,621	9,795	47,166	3,142	4,981	13,186	220,419
August 1	89,240	32,978	20,214	12,443	49,384	3,173	5,222	12,293	224,951
% Change	+2.4	—5.5	—2.4	—21.2	—4.5	—0.9	—3.6	+7.2	—2.0

OIL FIELD SUPPLY TRADE NEWS

Purchases Of Tube And Plates By Industry Slower

By Special Correspondent

PITTSBURGH, Oct. 9

FRESH orders for tubular goods from the oil fields continues to dwindle as to tonnage, although a large number of individual interests, large users, jobbers, etc., place intermittent orders for small tonnages. These usually comprise 50 or, 100 tons at a time of casing, line pipe, etc., although large producers such as the National Tube Co., the pipe and tube subsidiary of the United States Steel Corp., continues to report an occasional 500 to 1000-ton lot from oil interests in the west, south or southwest. Shipments on old orders, however, continue to involve large tonnages and the Jones & Laughlin Steel Corp., Pittsburgh, continues to achieve signal success in delivering oil country goods for Wyoming and Texas, via the rail and water route, sending the material in barges down the Monongahela, Ohio and Mississippi rivers to Louisville, Ky., Evansville, Ind., St. Louis, Mo., and Memphis, Tenn., from which points material is distributed to inland points by rail.

Incidentally the Jones & Laughlin Steel Corp. in order to render better service to the oil fields, has just purchased a site of several acres in Memphis, Tenn., on the Mississippi river, on which it will establish a steel distributing and storage depot with a river and a rail terminal. It has completed the building of a number of new type gondola barges of all-steel construction and has under construction a new steel hull towboat to increase its present fleet of eight steamers and 200 barges. Shipments are made 1000 to 1200 miles by river and then 1100 to 1300 miles by rail.

Pipe mill operations remain at a fairly high rate, around 90 per cent being a fair general average. Output is better than it was, due to cooler weather. The delivery situation is somewhat easier than it was since order back-logs are being discharged. Pipe mills operating their own blast furnaces for their steel mills are absorbing 100 per cent of pig iron production.

The Los Angeles Gas Co., Los Angeles, Cal., recently placed an order for 25 miles of 6-inch and 25 miles of 8-inch plain end pipe, the whole order involving about 3525 tons. Another southern California interest has recently placed 450 tons of 8-inch plain end pipe.

In the Pennsylvania-West Virginia oil fields, no large amount of drilling is forecast for the coming weeks and during the winter it will probably be particularly light this year owing to the state of the oil market.

Plate mills in the east are only working 40 per cent of capacity while around Pittsburgh they are operating at about 70 per cent.

This indicates a falling off in demand and the only tank inquiries current here are for one, two or three tanks of varying capacities, the usual inquiry involving only a few hundred tons of plates. In Cleveland an inquiry is out for 3000 tons of plates for light tank work. The chief item of importance in the Philadelphia district involves three to six barges for the Standard Transportation Co., a Standard Oil Co., subsidiary, involving a round tonnage of plates. Activity reported in the Chicago territory last week has ceased, although it is learned on good authority that approximately 50,000 tons of tank work are expected to come up before next spring.

About 200 tank cars involving a sizable plate tonnage, have been ordered recently by one company from the General American Tank Car Corp.

Structural shapes are firm in Pittsburgh, at 2.50 cents, Pittsburgh, although some Pittsburgh makers are quoting 2.40 cents. Pittsburgh in the east in order to compete with eastern makers who have lighter order books.

Since so much tonnage of pig iron enters monthly into oil country goods, it is of interest to note that in September pig iron output fell off to the lowest total since last February. September production was 3,123,611 tons as against 3,448,886 tons for August, a decline of 324,275 tons in the month. This is 744,611 tons below the high point of production for this year reached in May. The September production was at the rate of 104,120 tons per day as compared with 111,254 tons per day in August.

Export figures for August, which have just become available, show that in casing, oil line pipe, etc., 6562 tons were shipped abroad in August this year as compared with 2290 tons in August, 1922. This brings the total for the eight months ended Aug. 31 to 38 766 tons as against 31 791 for the same period last year. In ship and tank plates, only 175 tons were shipped in August this year as compared with 328 tons for August last year. The total for the first eight months, this year was 2189 tons as against 1589 last year. Tin plate exports this year increased likewise over last year, 5995 tons of tin plate being shipped abroad in August, 1923 as against 4095 tons. August, 1922. The total for eight months this year was 71,332 tons as against 53,548 tons in the first eight months of 1922. Much of this tin plate tonnage was for oil cans for Japan.

Not many projects are under way by oil companies, hence inquiries for equipment are limited.

Purchases of machinery and electric power equipment, however, are to be conducted in this country by the Guatemala Oil Corp., Guatemala City, Guatemala, Central America, recently formed with a capital of $5,000,000. The initial development at its properties in northwestern Guatemala will cost $500,000 with equipment.

Additional machinery will be bought and installed by the Gorgas-Pierie Mfg. Co., 144 East Allen street, Philadelphia, manufacturer of oil products, which will remodel the plant of the American Agricultural Chemical Co., Delaware avenue, Philadelphia, recently acquired.

Machinery for the new works of the Roxana Petroleum Co., Lima, O., together with the plant itself will cost $300,000. Lubricating oils will be manufactured and expenditures will commence shortly.

While a factory site is yet to be selected, tentative inquiries are out for its equipment by the Lane Oil Heat Manufacturing Co., 111 Endicott arcade, St. Paul, Minn. John J. Lane is president.

Supply Trade Personals

CASPER, Oct. 4.—B. O. Hammond of the Parkersburg Rig & Reel Co. has returned to Casper after having been marooned several days at Riverton by high water and wash outs.

* * *

CASPER, Oct. 6.—C. C. Van Valkenburg, district engineer for the National Supply Co. is leaving for Montana where he will install one of the company's Superior oil engines.

* * *

CASPER, Oct. 4.—C. L. Cron, Casper representative for the Gas Engineering & Construction Co. of Pittsburgh left Saturday to attend the sessions of the International petroleum congress in Tulsa from Oct. 8 to 14.

* * *

CASPER, Oct. 5.—R. J. Lindsay, vice president of the Hope Engineering & Supply Co. with Tulsa headquarters, is spending a few days in Casper. This is one of the pioneer construction companies in Wyoming territory and has considerable work underway.

* * *

CASPER, Oct. 5.—Joe L. May of the May Tank Co. has returned to Casper after a trip to Kansas City and other eastern points.

* * *

CASPER, Oct. 4.—George D. Paine, local manager of the Frick-Reid Supply Co., has returned to the Casper store after an absence in Rawlins and Denver.

SAN FRANCISCO, Oct. 9.—C. P. Bowie, engineer in charge of the San Francisco office of the U. S. Bureau of Mines, E. C. Lane, chemist and C. E. Steidel, assistant petroleum economist, visited the oil fields of southern California in connection with the activities of the bureau being carried on in those districts.

THE EDITORS' VIEWPOINT

New Move For Standardization

THE matter of standardization of its too's and working equipment in the general interests of efficiency and economy keeps coming before the oil industry, regardless as to whether or not it makes the first move to consider the matter. The general principle involved, that of eliminating duplication in manufacture of unnecessary types and sizes, is so meritorious and has been adopted with great savings by a sufficient number of industries that it is hard to conceive that it would not be applied to the oil business in some way or another.

The newest move in this direction comes through efforts of the manufacture of steel barrels. They sent a representative to the Chicago convention last week to find out from the oil men there why the number of different types of steel barrels now in use in shipping petroleum products could not be reduced from 16 to possibly 3.

They further brought word that they, as manufacturers of this equipment, and the oil industry as its users, may be forced to standardization in this case through its previous adoption by the plate mills. The mills see the advantage to their own operations if some of the types of plates now called for making into steel barrels can be eliminated. Unless the barrel makers or the oil trade as users can see good reasons why this elimination should not take place, it is likely to come to pass without much active effort on the part of our own industry.

The barrel makers themselves have been at work on the proposition for some time through a committee from their association, and the oil industry as represented at the Chicago meeting made a fair start toward its share, and should not allow the matter to drop. Whether the number of sizes and types can be reduced to three remains largely for the industry to determine. But no one can argue that there is not room for some degree of standardization in this equipment; and this without taking away from the barrel makers the opportunity to go on improving the efficiency of this equipment as they have in the past.

If Secretary Hoover at Washington is not remembered for anything else during his administration of the Department of Commerce at Washington, he will have to his great credit the starting of American industry on the work of standardizing its products to do away with unnecessary duplication and useless types and sizes. What has already been accomplished in certain lines of manufacture is remarkable.

The oil industry was one of the first lines of business to discuss standardization, this in regard to rig iron parts. But the matter seems to have stopped right there. It is to be hoped that this more recent move on the part of barrel manufacturers will actually come to pass and that the subject in general will remain a live issue with the oil industry.—V. B. G.

A Cause For Suspicion

REFLECTIONS on two passing incidents. This morning I called up a coal company to order wood for my fireplace. The price, I found, would depend on how far I lived from the wood yard. Giving my address, I was told the price would be $11.26 per cord, the $11 being the cost of the wood including delivery over a certain area, the 26 cents being extra for the haul to my house, regardless whether I bought one cord or five. Talking with the order taker I discovered the cost would be even greater in my case, except that my wood pile, fortunately, is located where the driver can throw the wood from his truck through the cellar window.

That cord or so of wood now represents to me quite an investment, the more so because the coal company assured me I should have to wait several days until it could be delivered, and I shall pass out the suggestion that it be burned only when we have company or on gala occasions, such as Saturday evenings.

Last summer, in a community where we lived along the lake, it was quite a joke that the Standard Oil Co. would send a tank wagon to plow through a sand road to deliver gasoline to our cotages at the tank wagon market, 2 cents less than we could buy the same gasoline when we drove three miles to the town's service station. I tried my best to explain the oil companies' marketing methods and how an apparent incongruity here was part of a pretty good system to meet all conditions. But everyone there had the idea they were rather taking advantage of the oil company, and that if the company didn't wake up to the fact, far be it from any one to tell them about it. Some of the cottagers thought the service station price was robbery, since the company would make a three-mile haul and sell at 2 cents less.

Compare my feelings toward the coal company with those in the summer colony. I feel that $11.26 is too much to pay for wood, but I have no way to find out. The company's refusal to deliver it to my residence even at that price unless I pay an extra delivery charge rather enhances its value in my eyes. But with the gasoline, what may be taken as the desire to be of service to a portion of the public, even to giving it the advantage of an arbitrary definition of a tank wagon customer, simply created the suspicion there was something wrong with the whole business.

In one case it was service paid for; in the other free service with a price consideration to boot, a condition that naturally enough, arouses suspicion.—V. B. G.

Less Booze, More Prosperity

ONE of the effects of prohibition was commented on by the chief executive of one big refining company recently. He said that since prohibition in this country, they had been able to get 75 per cent more output from the refinery with 10 per cent fewer men; that today there are an average of 800 automobiles owned by the refinery employees, parked in front of the refinery each day. Prior to prohibition there were only something over 100. The employees seem to be more cheerful and are seeing more of their families.

While much can be said about prohibition being paternal legislation and invading one's personal rights, and while there may be considerable talk in social circles of an evening as to the availability of a quart of Scotch, the facts seem to be quite apparent on the manufacturer's books that his men are far better off than they ever were in the days of the saloons.—W. C. P.

In that cash and goodwill item of $230,000,000 and better Henry Ford carries in his balance sheet, along with no accounts receivable and no notes receivable, one feels constrained to wonder how much can be charged to dealers' good will.

How long must the great American public submit to reading "champagn" sauce on the restaurant bill-of-fare?

We're puzzled to know whether Uncle Sam's recognition of Mexico will call for a full bow and toe scraping, or whether the ordinary lifting of the hat will do.

What is more unfamiliar to the auto driver than the rear seat of his own car: but, on the other hand, how much of the driving is done from that same rear seat.

Permanent Organization Proposed For Tulsa Exposition

By L. B. Jackson

President International Petroleum Exposition And Congress

Presented At International Petroleum Congress

HAVING reached such enormous proportions, the petroleum industry must be maintained, stabilized and improved. Appreciating, as did the different organizations throughout the country, that great good could be derived from an exposition of improved equipment utilized by it, yet realizing that a great many things could be better attained through a congress, the same has been incorporated into a scheme which it is hoped will develop into an institution of such magnitude as to take in every branch of the industry in every country of the world, to meet annually and discuss the needs and requirements of the business and accomplish such good as may be possible through intensive organization and co-operation.

Certain of the things that we hope to accomplish have been enumerated and published to the world, as to some of which a mere statement of the thing desired is possibly all that is necessary to be said. One of these things is to provide a place where such an organization can meet and having in conjunction the congress and exposition so that both ends of this scheme can be worked out at one time so the tools and machinery of the industry can be exhibited and the welfare of the business freely discussed looking to the accomplishment of progress and success.

It is the desire of this congress to promote co-operation between the large and the small producer, the refiners and the transportation companies whether they be by pipe line, rail, boat or other means. Co-operation is essential to the life of any industry and must always be promoted and encouraged if any business is to grow and prosper.

Standardization

Again it is desired, if possible, to bring about the standardization of tools and equipment and afford opportunity for discussing the plans as to how this may best be accomplished. It would seem that no better place to argue these questions could be had than the place where the manufactured articles, tools, machinery, supplies and accessories of the industry are on display and where an opportunity could be had by comparison to see wherein the standardization of said articles would most benefit.

We hope by the congress and exposition to promote in the oil field workers and in the employees of all other branches of the industry, a friendly spirit of rivalry and contest to develop speed, accuracy and perfection in their work; to supply a place where men of this industry could meet and enjoy friendly intercourse, healthful amusement and develop their knowledge of the industry in which they are employed.

We also wish to encourage the development of a museum of petrology in which could be assembled the articles of historic value in our industry. This has been attempted heretofore but has never met with any great amount of success and we feel that if this exposition and congress could be maintained that the museum might be handled in conjunction therewith and make a permanent place where articles of interest and historic value could be assembled. It is to be desired that you gentlemen, delegates to this congress, give this matter of establishing this museum your serious consideration and try to develop some plan wherein this scheme can be successfully consummated.

PRESIDENT JACKSON formally opened business sessions of the Congress Tuesday morning with the accompanying address in which he outlines purposes hoped to be accomplished by both the exposition and congress.

Drive Out Fakers

Another and probably the most important of all the purposes of this International Petroleum Exposition and Congress is to make an earnest effort to drive the grafter and fake oil promoter out of the industry, but let it be understood right in the beginning by those not familiar with the business that this congress does not wish to censure or condemn the individuals who have incorporated companies with the very best of intentions and who by sheer bad luck and misfortune after honest endeavor and economy have met with misfortune and lost their resources.

When we speak of fake oil producers, we mean to designate those men who without conscientious scruples enter the oil business not for the purpose of producing oil *per se* but for the purpose of selling worthless stock to an innocent and unsuspecting public.

This class of operators has given the honest man and well managed corporations actually engaged in the oil business, a bad reputation throughout the world.

In many sections where oil is not produced the people look on the oil producers as a whole as wild speculators, unreliable, untrustworthy and irresponsible in the extreme. Worthless stocks promoted by these fake promoters have flooded every state in our Union and the losses have mounted into millions of dollars and it is to be hoped that this Congress does everything in its power here and hereafter to educate the American people that it is an absolute loss for them to invest their money in stocks of this character, and furthermore to carry the information to them that the business of producing oil is, as a rule, carried on by honest men who use their own money in prospecting and developing or by companies which are managed by honest and efficient men whose utmost desire is to conduct their business in an honest, upright and economical manner for the benefit of their stockholders. And some system or propaganda should be worked out so that the investing public can have some established means of discerning between the legitimate stock on the market and the worthless stock offered by fake promoters.

Gives Industry Bad Name

There is one other purpose which was had in mind at the organization of this congress that should be near and dear to the heart of every oil man and that is to work out some plan by which a home for the old, indigent, poor and homeless oil man may be afforded so that he, regardless of which branch of the industry he might have labored in, may seek shelter in his declining days when he finds his pocket empty, his home broken up, the power to labor gone forever, that there will be a place where he knows that he will not only be welcome but will have all the comforts and necessities of life in his declining days.

With this great humane purpose in mind we have already caused to be organized a society known as the Knights of the Derrick and from the funds raised by the admission fee into this order and solicited by the members thereof whose principal duty it will be from this year on to labor to that end, we hope to establish a home. It is our desire to work out all details and purchase some place in the oil field, within the next year, a farm and as soon as funds can be raised through the order of the Knights of the Derrick, or otherwise, to erect necessary and suitable buildings and after the necessary improvements have been acquired, it will be the duty and should be the great privilege of the members of this order and all other men interested in the business, to establish a substantial endowment to maintain this home through the years to come. All other professions and industries have institutions of this kind and the great fraternity of oil men must not be lacking in such a magnificent institution, and to this cause let us put our hearts, hands and purses that it may succeed in the most magnificent sense of the word. If you are not now a member of the Knights of the Derrick you should be, and I hope soon will be.

Having in view the purposes I have in a rambling way recited to you, this Congress has been called and convened. I wish you the greatest success in all of your efforts and undertakings and trust that this may be but the first of many meetings that will be held hereafter and that each year will bring greater efforts and be crowned with greater success.

Economic Difficulties In Government Regulation Of Oil Business

By C. B. Ames
General Council The Texas Company

(Presented At International Petroleum Congress)

THERE is a vast difference between regulating the industry so as to prevent waste and price fixing; the former being entirely consistent with private ownership and control, as to which in every industry it is the duty of every owner to exercise his own rights of property in such a way as not to unreasonably injure other owners of property possessing equal rights. But when the petroleum has been lawfully produced and reduced to possession, it then becomes private property, as much so as in the case of any other commodity.

If, however, the government had the legal power to fix the price of petroleum, economic law would prevent its doing so for the obvious reason that it would have no basis on which to act, no definite criterion to guide its course. In fixing prices of telephone, electricity and railroad service there are definite bases upon which to act, including the investment in and the value of the property which has been devoted to the public use, the volume of business, the stability of the business, the value of the service and the return on the investment.

It would be impossible to apply any of these established formulae to the oil industry. Of the 15,000 producers each one probably has a different cost of production. Obviously it costs more to produce oil from a small well than from a large one. If all the wells belonged to one company, a general average of cost might be applied and an approximate value of the investment obtained.

But with 285,000 wells producing oil, and each one involving more or less difference, with 200 oil producing fields, each one of which is different from the others, with production at times far in excess of the demand and at other times far below the demand, with the life of every field speculative, with the possibility of any well being a dry hole, is obvious that no governmental bureau could fix a price based on cost of production. If the price should be based on the cost of flush production, it would destroy the settled production. If the price should be based on the cost of settled production, it would make enormous and unjust profits for the flush production.

Consider Other Products

In addition to these facts within the industry, this bureaucrat who might endeavor to fix the price of oil would have to take into consideration competitive conditions of other industries. Fuel oil, for example, comes into competition with coal and natural gas, and this price fixing agency would have to know every product obtained from crude oil, every product with which it comes into competition, the market conditions of all these products, the cost not only of producing the crude but of refining and distributing its manifold products, and take all these factors into account before fixing the price.

If we assume that all this wisdom can be assembled in a government bureau, this bureau would then be compelled to know all the changes that are going to take place, not only in the petroleum industry, but in the entire economic structure, and be able to adjust its price from week to week to meet these kaleidoscopic changes.

TAKING each branch of the business and waiving aside questions as to the legal and moral right of the government to regulate the oil industry through fixing prices, Judge Ames confined his address to a presentation of the economic difficulties faced in any such regulatory measure. Mr. Ames delivered his address at the annual banquet of the Mid-Continent Oil & Gas Association at Hotel Tulsa, Oct. 10.—Editor.

Obviously, price control in the petroleum industry, as in every other, must be left to the law of competition, and cannot be controlled either by a government bureau or by any one corporation or group of corporations. The supply of petroleum, demand for its products, competition between producers and purchasers, and between the petroleum products and other products, all act upon the price structure, and it is a result of many complex movements and cross-currents.

All that government can do in respect of prices is to keep open the channels of competition, and this it should do. And more than this it should not undertake.

Refining of Crude

There are approximately 500 refineries in the United States, owned by approximately 250 different companies or individuals. These refineries are diligently seeking improvements in refining processes and applying to this search all the talent available. Marked advances have been recently made, substantially all of which are covered by patents applying to various cracking processes.

There are some conflicting claims which have resulted in litigation and may result in further litigation. Some of this litigation, however, has been recently settled, with the result that the patent situation has been greatly improved and the refiner can take his choice of several processes with reasonable freedom from fear of infringement.

Certainly in the refining department of the petroleum industry there is no occasion for governmental regulation.

Distribution of Products

In the sale of refined products, so far as I am advised, criticism has been confined almost wholly to the price of gasoline. Of the dozens of other petroleum products the distribution seems to have been handled satisfactorily, but there has been widespread dissatisfaction in the distribution of gasoline.

Some companies engage in all of the departments of the petroleum industry, including production, transportation and refining of crude, and distribution of the manufactured products, including the sale of gasoline at company owned filling stations. Others produce, refine and sell it at wholesale, without operating filling stations. Still others purchase crude, refine it and sell the products at wholesale. Others merely deal in the refined products, buying from refineries and selling to retailers while still others merely own filling stations and buy in the open market.

It is estimated that there are 90,000 filing stations in the United States, exclusive of the curb pumps, which amount to several thousand more. This complicated situation, involving thousands of owners in every state, naturally results in diversity of price in different sections of the country.

The tendency, of course, is for the same price to prevail in each community, because if one dealer cuts the price other dealers naturally meet the cut. It would be difficult for different dealers in the same community to sell their products at different prices, and it is as natural for gasoline in the same community to be sold by different dealers at the same price as it is for bananas or apples or potatoes or any other commodity.

Competitive Conditions Vary

Diversity of price in the same community is the exception rather than the rule, but diversity of price in different states is the rule rather than the exception. The heavy temporary excess production of crude in California has naturally reacted upon the price of crude throughout the United States, and this has naturally been reflected by reduced prices of gasoline. This, of course, has been the result of competitive conditions, and competitive conditions by different companies differently situated in different states do not operate exactly alike. It should occasion no surprise, therefore, that there is a variation in price of gasoline in different states.

It goes without saying that the government should guarantee the existence

of competitive conditions, and every man who sees the situat on from the inside knows that competitive conditions exist, and that, if anyth ng, they are more strenuous than is desirable from the standpoint of e.ther the industry or of the public.

Should Guarantee Competition

However, after the government has guaranteed competitive conditions, and honesty in marketing, it ought to leave the industry alone. There are too many filling stations. A fi ling station on every corner is not desirable from any standpoint. It imposes an enormous tax upon the industry and upon the public. If there are two filling stations where one could supp y the trade, it is obvious that there is double invest ment and double the number of salaries to be paid, and that this double expense must ultimately be paid by the pub ic.

But what is there that government can do to prevent a citizen from building a filling station if he wants to? The existence of this superfluity of filling stat ons is the best evidence of absence of control and of the existence of competition, because no industry controlled by a combination would tolerate the enor nous waste in unnecessary filling stations.

Should the government fix the price of gasoline, or should it fix the margin between the tank wagon price and the retail price, or should it fix the marg n between the tank car price and the tank wagon price? Fixing the price of gasol ne, of course, would necessitate fixing the price of crude oil, and I have already demonstrated that is impossible.

Fixing a marg'n of profit is impossib'e unless the price of gasoline is fixed. A dozen dea ers in the same town might purchase their gasoline at different prices. What would be the margin of profit for the great companies who produce, transport, refine and market the.r own products? If it is based on the cost of production they would have different costs and, therefore, different prices, and yet, by a fixed margin of prices each would be required to mainta n a different price and the independent dea.ers in the same community would doubtless be required to ma.ntain a h gher price because they would be purchasing their gasoline from wholesalers who were adding their marg.n of profit to the refinery price.

Again the result wou'd be that the lowest cost producer would take all the business to the extent of his capacity, with the others prohibited by law from meet'ng the competition. If, on the other hand, the others were a lowed to cut their marg'ns so as to meet the competition, there would be no established margin and the scheme would fall by its own weight.

Some Refinery Processes And Yields By Various Methods

By F. B. Koontz

General Sup't., Manufacturing Department, Cosden & Co.

(Presented At International Petroleum Congress)

THE selection of the proper crude is one of the principal factors which determines whether a refinery is to be operated at a profit or a loss. The recent price classification gives the refinery a choice of three crudes.

The operating equipment is the real factor to be considered in refining. If the yields are to be obtained at the lowest cost the most modern equipment must be used. As the principal operation carried on in a refinery is fractional distillation, it is of the utmost importance that this equipment be of the most efficient type. Recent development along this line is the use of aerial towers to such an extent that all cuts or fractionations are made direct from the crude. The more complete the equipment the sharper the cuts, with each fraction containing a minimum of those fractions just above and below, and the consequent elimination of rerunning. This sharp fractionating renders possible the blending of high and low boil'ng point distillates for the different stocks, which not only saves many changes in operation, but what is more important, increases the yields.

Crude Distillation

In the refining of crude, we encounter three general methods of distillation, namely, batch, semi-continuous and continuous. In batch distillation the still is charged and the distillates taken off, leaving bottoms which are pumped out. Batch distillation necessari'y decreases the plant capacity, but at the same time it is possible to make a closer fractionation.

In semi-continuous distillation, one or more stills are used. The still is charged and after sufficient distillates have been taken off, fresh charging stock is pumped in, until the quantity of accumulated bottom makes it necessary to shut down and pump out. This method of distillation increases the plant capacity somewhat over the batch method. The fractionation, however, is less sharp. In any case, these methods of distillation should not be applied except when topping crude, though they are the ones generally used for rerunning stocks.

For continuous distillation, two to 12 stills are generally used, each still line being a few inches lower than the preceding in order that a gravity flow may be had. The oil is fed continuously from the first to the la-t still until sufficient distillates are taken off. Continuous distillation, from the standpoint of capacity and fuel economy, is the most efficient method of handling the crude, especially if the sti'ls are so equipped that all finished products may be made by one initial distillation.

Pressure Still'ng

If the maximum yields of gasoline and kerosene are to be obtained from the crude, it is necessary to use some type of cracking still. There are many different processes for cracking, the more successful being based on temperature and pressure. As yet, no atmospheric or catalytic processes have been developed which can compete commercially with the shell type of tube type o pressure stills, and today the shell type is gradually becoming obsolete.

During the past few years, through constant experiment and operation, the tube still has been developed to a high degree of efficiency. There are several designs in use, consisting of a series of pipes, usually about four inches in diameter, through which the charging stock enters before going through the system to shells and towers. Compared to the shell type of still, its advantages are numerous. A minute description of these points would be wearisome at this time, but mention might be made of the saving in cost of construction. Generally speaking, a tube still of 1000 barrels capacity, which is approximately the capacity o' eight 8 x 40 feet shells, can be constructed at a cost of 20 to 30 per cent less than for the eight shell stills.

The character of charging stock to the tube still is not so sharply limited as it is to the shell. For instance, the usual shell type, operating at lower temperatures and pressures, is run on uncracked gas oil, whereas, the tube still can handle not only this distillate but other characters of distillates, which are impossible to be processed through the ordinary shell still.

Operating cost is a factor which reflects favorably on the tube still, both in the items of labor and fuel. The labor required to operate, say two batteries of shell type stills of a capacity

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MR. KOONTZ'S paper, published herewith, was presented on Tuesday, Oct. 9 before the meeting of the Western Petroleum Refiners Association in Tulsa which meeting was held during the International Petroleum Congress. —Editor.

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of 2620 barrels can handle tube stills of 4000 barrels capacity.

Since the demand for light products of petroleum is constantly growing, it is to the tube still method of cracking that we must look for increased production, conserving at the same time that which has been heretofore a costly economic waste.

Treating

After production, the treating of the distillates that they may be shipped as refined products, is necessary. This is accomplished by treating with chemicals or by filtering through fuller's earth. The general methods of chemical treatment are batch and semi-continuous, the latter being the most economical, especially in the handling of gasolines. At present many attempts are being made to supplant the old methods for decolorizing and deodorizing light oils. Two of the most promising are the silica-gel and calcium hypochloride treatments. It is a well known fact that cracked products are more difficult to treat than those direct from the crude. Also, it is a recognized fact that when properly treated the refined product is equal or superior to the straight run gasoline when used as motor fuel.

Lubricating Oil Distillation

In the production of lubricating oils the three methods of distillation are again encountered, the batch and semi-continuous methods being most generally used. The quality of lubricating oil is greatly affected by the manner in which the distillation is conducted. In the production of wax distillate, the use of an excessive amount of steam improves the quality and increases the yield of lubricating distillate, but on the other hand it inhibits the formation of crystalline wax, resulting in a poor pressure stock. The method for removing crystalline or cracked wax, depends on the wax having particles of definite form whereby the wax can be strained from the oil. In order to be removed in this manner, the wax must be chilled and be of crystalline structure to form a porus but firm cake against a press cloth. The wax must retain its structure so as not to be forced through the cloth, and the wax cake as it builds up, must remain porous so as to allow the oil to strain through it.

The wax free oil resulting from the pressure is utilized in the manufacture of lubricating stocks. The wax is taken from the presses, and as it still contains oil, is sent in a liquid state to the sweat house to have the oil and low and high melting point waxes removed. The wax is placed in pans containing water and coils of pipe. The temperature of the house is lowered until the wax assumes a solid form, then the water is drawn off, the temperature gradually increased and the oil slowly drops from it, or to use the refinery expression, the wax "sweats."

After sweating, the wax is practically free of oil, and is again melted and filtered through fuller's earth or other decolorizing agents. The liquid is then run to the barreling house where it is taken up by a large drum revolving in a bath of the melted wax. As the drum turns the film of oil is chilled and scrapers remove it in the form of white wax.

FILTERING OF LUBRICANTS

Percolation vs Contact

After chemical treatment, those oils which are not sufficiently decolorized are filtered through fuller's earth or some other decolorizing agent. The old percolating filter is the one most generally used for this process, but recently the contact process has been developed to a point where it compares very favorably in yields with the former, and is much superior in the matters of capacity and low cost of installation. It would seem that here is another refining operation which may be abandoned by the up to date refiner in the not far distant future.

Cold Setting vs Centrifuging

Another department which offers a choice between two general methods of refining is in the production of lubricating oil and bright stock. Here again the more recent development—the centrifugal separation of wax, based on the principle used in the cream separator, is rapidly gaining favor over the old cold-settling method. Cold settling depends upon diluting the oil to a gravity where the wax when chilled to solid form will be slightly heavier than the solution in which it is suspended. The amorphous wax can then be removed by holding the oil cold until it settles to the bottom of the tank, or it can be centrifuged out after the oil is chilled. The centrifugal method is not only cheaper but produces bright stock of superior quality, in that it extracts a larger percentage of the amorphous wax, a product which has no lubricating value, and at the same time increases the cold test of the finished oil.

The outstanding advantage of centrifuging is that it makes a sharp line separation between the wax and the dilute oil. Centrifuges in use for this work multiply the difference in weight of the wax particle and its displacement in the oil many thousand times. This makes the separation immediate and complete. By separating the wax from the oil as soon as the oil is chilled insulated chilling tanks are required; there is less oil and naphtha tied up in the process and it is not necessary to hold the chilling tanks at the low temperature for long periods. In diluting the stock for centrifuging, less naphtha is required than is necessary for cold-settling, thus decreasing the volume to be chilled and therefore effecting a saving in refrigeration.

Makes Clean Cut

Since centrifugal removal of the wax makes a clean cut separation, there is less oil entrained with the wax and less wax in the discharged oil. This increases the yield of lubricating stock and produces a better cold test. The greater part of the cost in the manufacture of viscous lubricating oils comes before the wax removal. This leaves a valuable product to be dewaxed and a loss of a high price oil in the cheaper wax is serious. It is safe to say, that centrifuging produces 10 per cent more finished oil from a given amount of filtered stock than the average cold-settling plant. Allowing for the corresponding smaller production of wax, this increases the value of the combined finished products by a little over seven per cent.

In the manufacture of bright stock by the centrifugal process, it is necessary to go through about the same process of filtering and refrigeration as with the cold-settling method. The time element by cold-settling is one of the objectionable features of this method. The great differences between the uses of the centrifugal process and cold-settling is the reduction of time by the centrifugal process, increased capacity and low cold test. The cold test is 20 to 25 degrees lower for the same viscosity when manufactured by centrifuging. This means that during the colder season of the year, it is a more desirable blending medium with light neutrals for motor lubrication than cold settled bright stock.

There has been much controversy regarding the relative merits of the bright stock produced from Mid-Continent crude and Pennsylvania crude, but for all practical purposes there is very little, if any, difference between the finished products when manufactured by the centrifugal process of separation; but there is a difference between bright stock made from Mid-Continent crude by centrifuging and that made from Pennsylvania crude by the cold-settling method. A comparison will show the gravity, flash and fire to be about the same, but the viscosity at 212 degrees is 20 to 50 points higher and the cold test 20 points lower than the cold-settled bright stock.

Bright stock is the product from which the better lubricants can be made. The principal use for bright stock is, compounding with light neutrals for building up viscosity and flash. If a 40 to 45 cold test bright stock, as made by the cold-settling method, is used as a blending medium, the resulting cold test of the blend will be too high for motor oils; on the other hand more of the 20 to 25 cold test bright stock as manufactured by the centrifugal process, can be used in building a neutral to a higher viscosity and lower cold test requirement. As a result, the blend or compound will have a higher flash, fire and viscosity and lower cold test and is a more desirable product for motor lubrication than the lower flash, fire and viscosity and higher cold test bright stock made by the cold-settling method.

Wax of No Value

The viscosity of amorphous wax at a high temperature is very low. Wax is a non-lubricant. Bright stock with a low cold test as manufactured by centrifuging contains less wax than cold-settled bright stock. In the meeting of viscosity specifications for high temperatures less of bright stock produced by the centrifugal process is required than would be needed of cold-settled bright stock, for the reason that the former is more viscous at high temperatures. It follows, therefore, that a low cold test bright stock is more valuable as blending medium with neutrals.

From a given quantity of cylinder stock treated by cold-settling, 70 to 75 per cent will be turned out as finished bright stock. By the use of the centrifugal process, 80 to 85 per cent is turned out as finished stock. The difference

Notes On Evaluation Of Casinghead Gas In The Oklahoma Fields

By Oliver U. Bradley

Engineer, Five Civilized Tribes, Muskogee, Okl.

Presented At International Petroleum Congress

This paper gives data on casinghead gas from typical oil and gas mining leases the Oklahoma oil field t eating each township as a unit. There are shown graphically, in 6-mo. periods, total volumes of casinghead gases determined from meter readings gasoline content of same together with corresponding figures on the average productivity of the gas in gallons per thousand cubic feet according to a field test. Total oil production for each township up to and including Dec. 31, range depth of wells, average thickness of sand and approximate gravity of the oil are also given.—Author

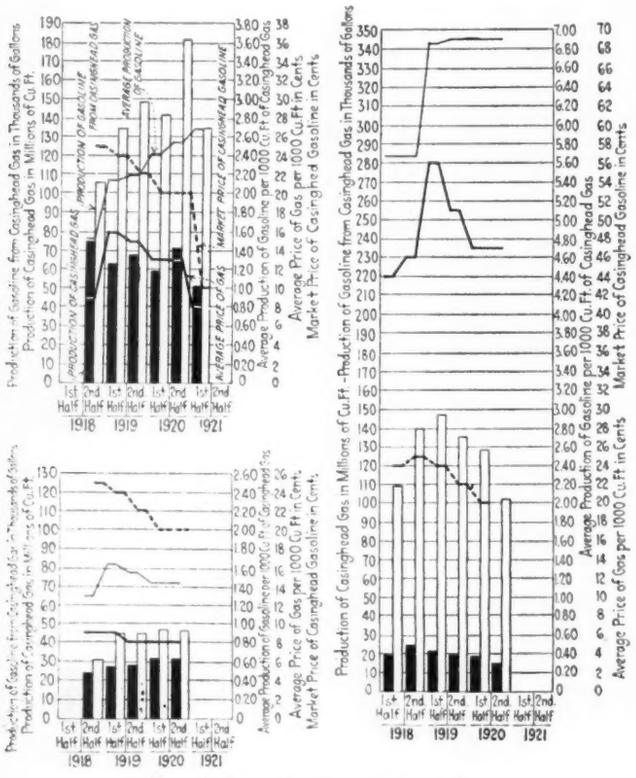
CASINGHEAD-GAS data have been gathered in some of the oil fields of Oklahoma where testing work has been done regularly and the volumes of casinghead-gas were available. The cases enumerated in the table and the data shown in the graphs do not represent the greater part of oil or casinghead gas production from any one township, nor are leases contiguous. The properties in each township, howgeneral conditions, such as the date of ever, may be considered as typical of completion of wells, depth, character, and thickness of oil sand, time of pumping, present oil production, vacuum carried on wells, and usual operating practices.

It was deemed advisable to subdivide the time into 6-month periods, as it was impracticable to make the tests more frequently, furthermore 6 months is probably the minimum period within which there would occur a noticeable increase in the productivity of the gas. It must be remembered that the figures on volumes are subject to the usual irregularities and relative inaccuracies o meter measurements of gas under varying degrees of vacuum, although all the volumes have been corrected to a normal pressure of 4 ounces. When meters got out of order, the average daily volume that passed through them for the previous 30-day period was used when figuring the volumes for any one month. While this is not absolutely accurate, it is the most practical way to arrive at the amounts of gas utilized and all operators, both sellers and users of casinghead gas, accept such estimates as fair and reasonable.

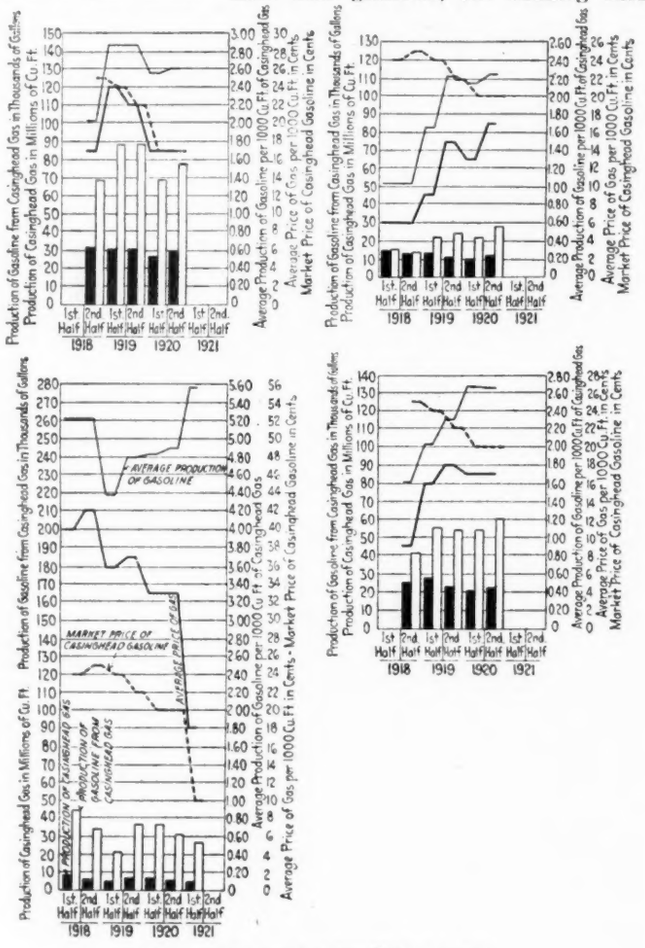
It will be observed that the figures, in many instances, fail to show any rapid or alarming decrease in casinghead-gas volumes over the 6-month intervals specified, or, in fact, through the entire period of 3½ years. No doubt there is a relationship between the exhaustion of the oil content o. the sand and the supply of casinghead gas derived therefrom, but the nature of this relationship has not been studied. The probable progressive increase in points of vacuum carried on the wells and the efficiency of its application must also be considered when noting the relatively small percentage of depletion of the gas supply in some cases.

Of all the districts from which data have been gathered, the Cushing field

THE accompanying is a preprint of the paper by Mr. Bradley which was to be presented on Friday, Oct. 12, at the first meeting of the Institute of Petroleum Technologists, held in conjunction with the International Petroleum Congress in Tulsa. Part of the tabular matter of this paper and the charts corresponding have been omitted, those retained affording a comprehensive idea of Mr. Bradley's methods and the conclusions he arrived at.—Editor.


Production of Gasoline from Casinghead Gas in Thousands of Gallons
Production of Casinghead Gas in Millions of Cu. Ft.
Average Production of Gasoline per 1000 Cu.Ft. of Casinghead Gas
Average Price of Gas per 1000 Cu.Ft. in Cents
Market Price of Casinghead Gasoline in Cents
1st Half
2nd Half
1918
1919
1920
1921

FIGS. 1, 2, AND 3.—CASES 1, 2, AND 4.


Production of Gasoline from Casinghead Gas in Thousands of Gallons
Production of Casinghead Gas in Millions of Cu. Ft.
Average Production of Gasoline per 1000 Cu.Ft. of Casinghead Gas
Average Price of Gas per 1000 Cu.Ft. in Cents
Market Price of Casinghead Gasoline in Cents
AVERAGE PRODUCTION OF GASOLINE
MARKET PRICE OF CASINGHEAD GASOLINE
AVERAGE PRICE OF GAS
PRODUCTION OF CASINGHEAD GAS
PRODUCTION OF GASOLINE FROM CASINGHEAD GAS
1st Half
2nd Half
1918
1919
1920
1921

FIGS. 4, 5, 6, AND 7.—CASES 3, 5, 6, AND 8.

Data On Some Oil Producing Areas In Oklahoma

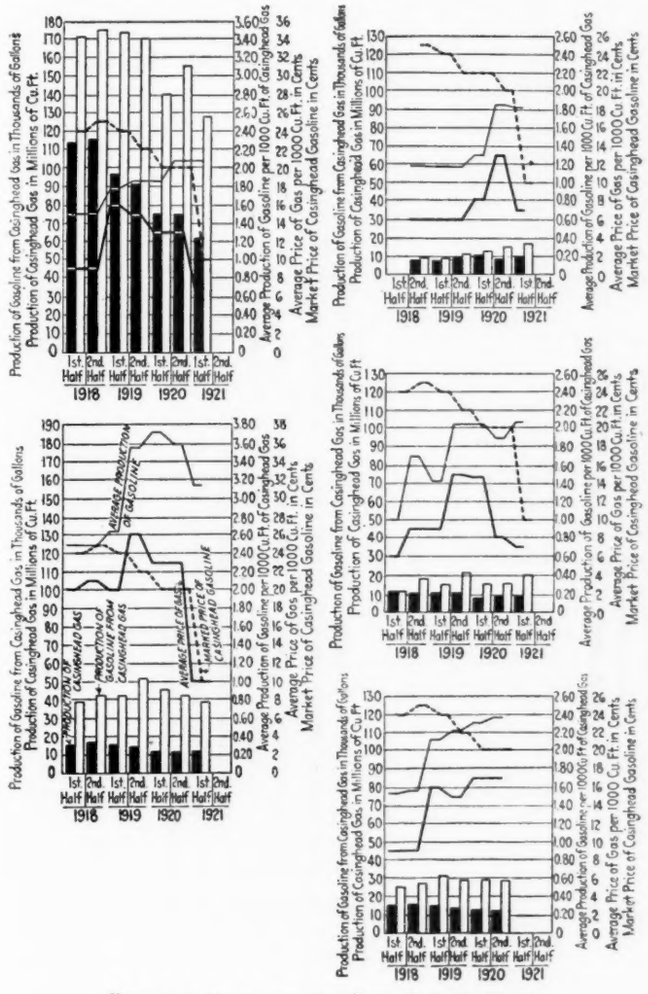
Case Number	Township	Number of Leases	Total Acreage	Number of Wells	Average Age of Production, Years	Depth of Wells, Feet	Thickness of Sand, Feet	Production per Acre to Dec. 1921, inc., Barrels	Number of Acres per Well	Gravity of Oil, Degrees Baume
1	27N, 13E	13	1,151.33	120	12.5	1,240–1,330	20–35	1,750	9.4	34–36
2	27N, 14E	5	400.00	21	9.5	1,195–1,225	15–25	621	19.0	34–36
3	27N, 15E	10	577.80	104	10.6	1,020–1,080	29–46	2,780	5.5	34–36
4	27N, 16E	8	470.00	57	13.0	640– 695	15–30	2,511	8.2	33–35
5	27N, 17E	2	99.41	26	10.0	640– 680	25–30	2,046	4.2	31–33
6	26N, 12E	2	152.13	17	14.5	1,350–1,390	26–60	3,303	8.9	33–36
7	26N, 13E	17	1,280.62	130	12.5	1,275–1,340	17–59	1,452	9.8	34–36
8	26N, 14E	8	739.93	83	11.3	1,040–1,115	24	1,533	8.9	34–36
9	26N, 16E	7	220.37	33	9.4	510– 645	20–35	1,335	6.6	33–34
10	25N, 12E	3	163.56	7	8.4	1,370–1,465	60–85	544	23.3	32–33
11	25N, 14E	5	209.64	39	9.0	985–1,100	18–27	2,073	5.3	32–34
12	25N, 16E	8	380.00	84	13.5	500– 540	18–30	1,324	4.5	31–33
13	25N, 17E	7	430.00	106	14.6	390– 470	20–30	1,649	4	31–33
14	24N, 12E	4	246.68	8	11.6	1,520–1,630	70–90	593	30.8	34–37
15	24N, 17E	18	1,030.00	217	13.4	400– 445	25–32	1,168	4.7	31–33
16	19N, 11E	2	200.00	6	6.5	1,875–1,980	18–30	330	33.3	35

embraced in townships 17 and 18N, range 7E, is the youngest and also the most important from the standpoint of quality o. oil produced, total production of oil per acre, and available reserves of casinghead gas. The operators in that field early realized the necessity of conserving the casinghead gas and, therefore, took every precaution possible in the operation of the wells. The effect of the application of vacuum to the wells was carefully observed and charts were made showing relationship between quantity of oil produced, points of vacuum carried, productivity of gas, and related matters. Many producers postponed pulling a vacuum on their wells for several months, taking just enough gas to relieve the back pressure, or kept it at a point that would permit the maximum production of oil. This careful handling of the leases has no doubt resulted in a minimum depletion of the supply of casinghead gas in that field.

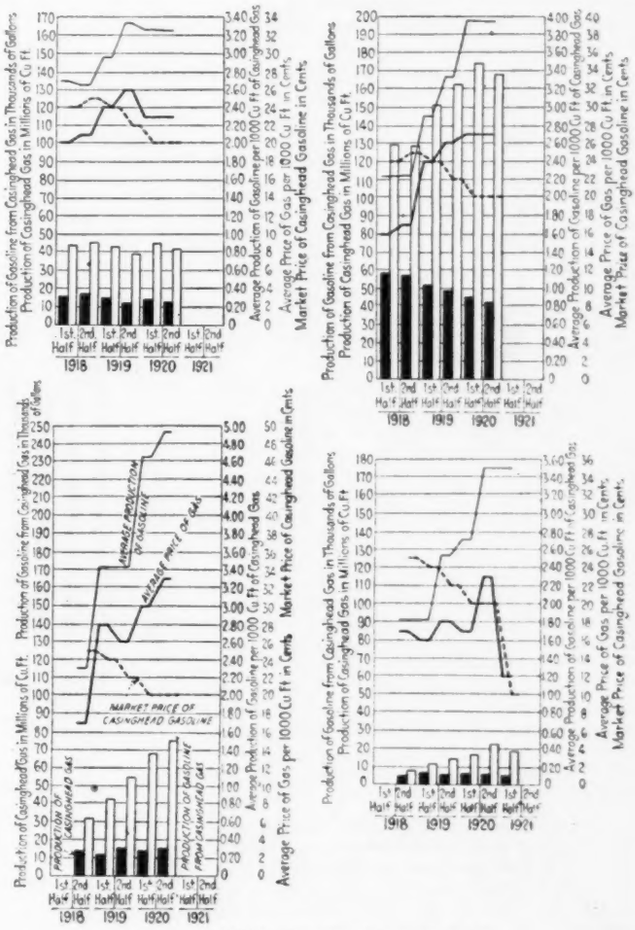
This preliminary presentation of the subject, from the standpoint of volumes of casinghead gas as closely as it was possible to determine them in field practice, considered in connection with the tests of productivity, confirms previous observations that the productivity of casinghead gas increases as the wells grow older but the rate of this increase is not so easily figured because of widely varying conditions.

In this record, the valuation factor obtained by the multiplication of the volume of the gas by its productivity, in gallons per thousand cubic feet, in order to obtain its potential casinghead-gasoline units, in gallons, shows an increase in fourteen of twenty-nine cases considered. In four cases, there is an increase in volumes because, possibly, of some irregularity in operating conditions or measurements of gas; and in two cases the productivity of the gas averages slightly less on final test than on the initial test. While there has been an upward trend in the productivity figures in all but two cases, the total increase in productivity over the entire period has not exceeded 1¼ gallons per 1000 cubic feet except in cases, 10, 14, 15, 16 and 24. In fourteen cases, the increase has been less than 1 gallon. The greatest increase was in case 14, where the average productivity was raised 2.64 gallons.

These productivity tests are, of course, subject to the usual errors, such as: (1) Time of year taken, as climatic conditions will have a certain effect on tests; (2) operating conditions on the lease, whether wells are on or off the pump and cleaning out work; (3) the point at which the sample of the gas is taken; (4) inefficient testing equipment and poor connections; (5) small errors resulting from the limited quantity of


Production of Gasoline from Casinghead Gas in Thousands of Gallons
Production of Casinghead Gas in Millions of Cu. Ft.
Average Production of Gasoline per 1000 Cu. Ft. of Casinghead Gas
Average Price of Gas per 1000 Cu. Ft. in Cents
Market Price of Casinghead Gasoline in Cents
1st Half
2nd. Half
1918
1919
1920
1921
INCREASE PRODUCTION OF GASOLINE
INCREASE PRICE OF GAS
MARKET PRICE OF CASINGHEAD GASOLINE
PRODUCTION OF CASINGHEAD GAS
PRODUCTION OF GASOLINE FROM CASINGHEAD GAS
AVERAGE PRICE OF GAS
AVERAGE PRICE OF CASINGHEAD GASOLINE

FIGS. 8, 9, 10, 11, AND 12.—CASES 7, 9, 10, 11, 12.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INCREASE PRODUCTION OF GASOLINE
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MARKET PRICE OF CASINGHEAD GASOLINE
PRODUCTION OF CASINGHEAD GAS
PRODUCTION OF GASOLINE FROM CASINGHEAD GAS
AVERAGE PRICE OF GAS
AVERAGE PRICE OF CASINGHEAD GASOLINE

FIGS. 13, 14, 15, AND 16.—CASES 13 to 16.

gas tested; (6) evaporation in open air tests.

Some of the tests were made by the owners of the leases and some by the purchasers of the gas, but in all cases there was a conscientious effort to arrive at as fair a field tests as could be obtained. The tests have not been made at any particular time of the 6-month period under consideration as it was not possible to perform the work in that manner; but there is a 6-month interval between tests on each group of leases. There are sometimes considerable variations in the results of the productivity of gas from adjoining and nearby leases, but only the average has been taken for all the tests for each group of leases. Further, no records were obtained on the various percentages of air in the different systems connecting the wells with the casinghead-gasoline plants. This record, if it could have been obtained, would not have been dependable as it would have been changed from day to day, because of irregularities in operating conditions.

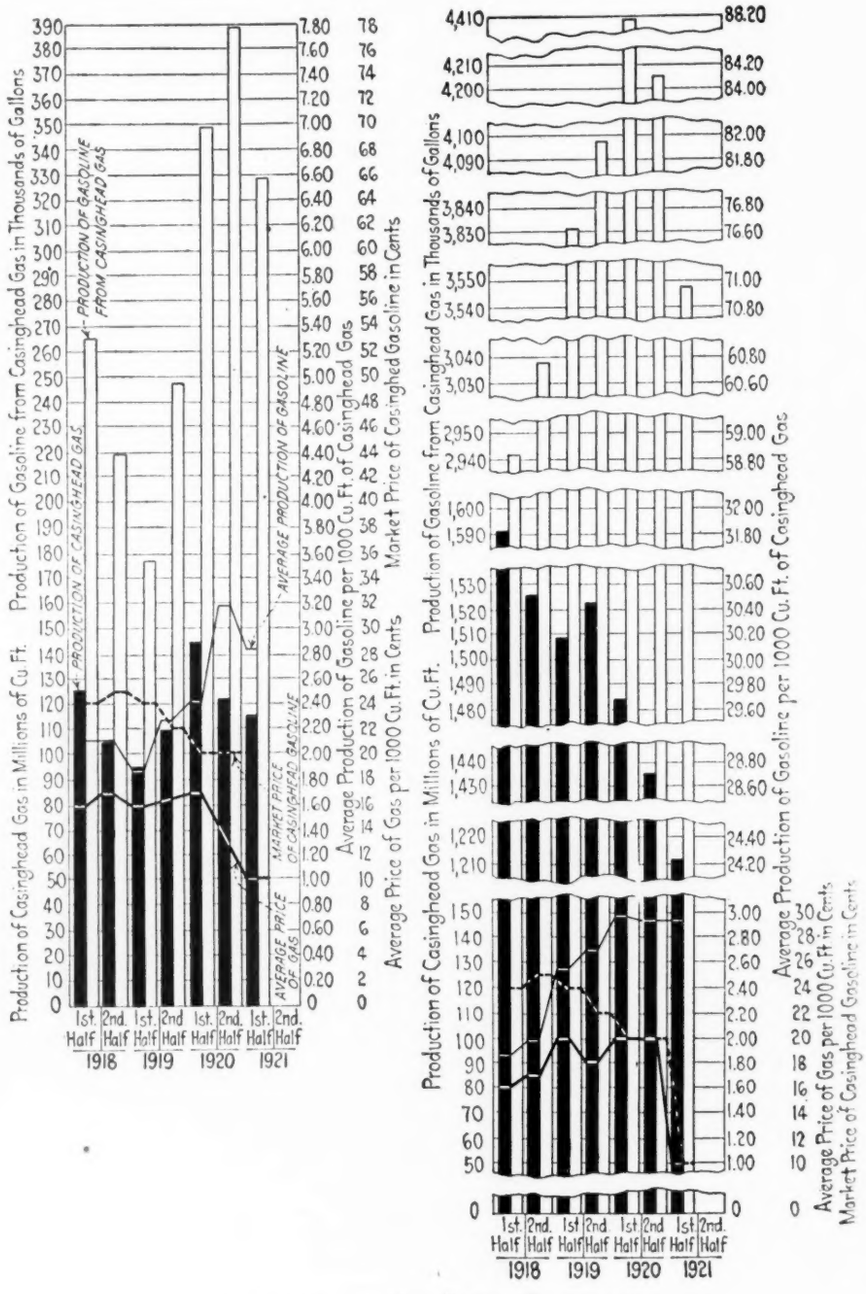
Some manufacturers of casinghead gasoline check up the productivity tests of the casinghead gas on individual wells, sampling the gas under vacuum conditions at the mouth of the well. This is done to eliminate, as far as possible, the admixture and utilization of the poor grades of gas in the plants, as frequently one or two wells on an oil lease will produce gas inferior to that coming from the other producing wells on the property. Cutting out the wells making the poor gas is good operating practice as mixing and treating gas of different productivity will yield a quantity of gasoline below the average productivity of the casinghead gas mixed and utilized.

It is not claimed that the gasoline content, in gallons, as here shown, represents the actual amount of casinghead gasoline that must be or was extracted and marketed in merchantable form The procedure in making the tests, however, allows ample margin for evaporation and other losses in ordinary plant operations and, as far as this is the case, the number of gallons shown may be considered fairly representative of the value of the gas in gasoline that should be recovered in an efficient and well managed plant.

The evaluation figures, here set forth, showing the value of the casinghead gas at the wells and the value of the casinghead gasoline at the loading rack have been prepared merely as a matter of theoretical comparison. The value of the gas has been fixed in accordance with its productivity and in conformity with a schedule submitted to the government by a number of producers of gas and manufacturers of casinghead gasoline in the Mid-Continent field and adopted and approved, Aug. 10, 1917. Subsequently, it was modified, the actual sale price of gasoline being substituted for the Chicago tank-wagon price. The market quotation per gallon is for raw casinghead gasoline of the ordinary grade suitable for use in blending operations.

The average price of raw casinghead gasoline, as near as could be ascertained has been used in these calculations; and when the actual average sale price is so used, the price of the gas works out on the basis of from 26.6 to 34.6 per cent of the sale price of the gasoline per gallon. That is, if a casinghead gas tests 1 gallon of gasoline per 1000 cubic feet and gasoline is selling at 15 cents per gallon, the price of the gas, according to the schedule, would be 4 cents, or 26.6 per cent of the market price of the gasoline. It is conceded by all manufacturers of casinghead gasoline, wro must purchase the casinghead gas that the payment of from one-fifth as a minimum, to a little over one-third, as a maximum, of the market price of 1 gallon of gasoline per 1000 cubic feet of gas, in accordance with the productivity of the gas, is equitable to all parties concerned. It is fully realized that richer gas can be handled at approximately the same expense as the poor grades of gas and, therefore, purchasers or users of the good gas can afford to pay a somewhat larger percentage of the value of the gasoline derived from the treatment of such gas.

That the casinghead-gasoline business as a whole is not as attractive a medium of investment as one would imagine is proved by the large number of dismantled plants and bankrupt gasoline companies in the Mid-Continent field. This statement is particularly applicable to those companies that must purchase their gas from producers at high prices and have made errors in estimating the available supply as well as quality of the gas to be used. There is considerable advantage in owning the oil leases and conducting operations thereon in the production of both oil and casinghead gas, using the latter in the manufacture of casinghead gasoline in one's own plants. Also when refineries producing blending material and possessed of adequate distributing and marketing facilities are owned and controlled by oil companies, the conditions are conducive to a substantial margin of profit. The purchase and the consolidation of many smaller plants into the larger operating groups has been an important development in the evolution of the casinghead gas industry during the past 2½ years.


Production of Casinghead Gas in Millions of Cu. Ft.
Production of Gasoline from Casinghead Gas in Thousands of Gallons
PRODUCTION OF GASOLINE FROM CASINGHEAD GAS
PRODUCTION OF CASINGHEAD GAS
AVERAGE PRODUCTION OF GASOLINE
MARKET PRICE OF CASINGHEAD GASOLINE
AVERAGE PRICE OF GAS
Average Production of Gasoline per 1000 Cu. Ft. of Casinghead Gas
Average Price of Gas per 1000 Cu. Ft. in Cents
Market Price of Casinghead Gasoline in Cents
1st. Half
2nd. Half
1918
1919
1920
1921

FIGS. 17 AND 18.—CASES 17 AND 18.

Centrifugal Removal Of Wax From Petroleum Lubricating Oils

By Leo D. Jones

Sharples Specialty Co., Philadelphia

(Presented At International Petroleum Congress)

THE use of the centrifuge for dewaxing lubricating oils grew out of the effort to secure better results than had been obtained by the common "cold settling" process. This process was the only known method for dewaxing steam refined cylinder stock (600° F. fire test), the product known as "bright stock" being commonly used for building up "pressed," i. e., dewaxed neutrals of, say, 200-sec. viscosity to a higher value.

The process consisted of mixing the cylinder stock with approximately one and one-half times its volume of naptha, heating to dissolve completely all the oil and wax and then slowly chilling to about 15° F. in large insulated tanks. This caused the wax to precipitate. It was allowed to settle out by gravity. The supernatant liquid was then drawn off and the naptha distilled off, leaving a still residue of bright stock. The sediment from the settling of a slushy nature, was withdrawn. After removing the naptha by distillation the residue was petroleum.

At some point in the process, preferably after the dilution but before chilling, the mixture was decolored by percolation through fuller's earth.

The finished bright stock produced by this process had a cold test of about 50° F. Efforts to improve this by chilling to a lower temperature resulted in a considerable reduction in yield, and increased uncertainty of settling. Even when chilling to 15° F. it was not uncommon to find that after a week's waiting a tank had not settled. It was then necessary to heat and rechill. This uncertainty was a serious problem; in one case a refinery superintendent had men riveters hold pneumatic hammers against the tank for hours, hoping thus to cause agglomeration and settling of the wax. Yields of bright stock above 70 per cent were uncommon.

History of Centrifugal Application

It is not surprising, therefore, that many attempts were made to improve upon the results obtained by cold settling. George H Taber, vice-president of the Gulf Refining Co., Pittsburgh, Pa., made a number of experiments with cream separators in 1890 but had done nothing more. The only centrifugals available were of the cream separator type. Such separators are not suitable for the separation of two liquids. They serve only to concentrate a dispersed phase of an emulsion into a fraction of the continuous phase, and it is hardly to be expected that they would have handled a liquid and a plastic solid.

It was shortly after putting into general use centrifugal separators employing the principle of hydrostatic balance that P. T. Sharples took up the investigation. He discovered that the wax, as separated by centrifugal force, differed from the slushy liquid separated by gravity. It was a plastic of too high a "yield" value to act freely as a liquid under the forces within the centrifugal rotor. It was only with considerable difficulty and by using a rotor of the hydrostatic balance type that adjustments could be made to give a discharge of wax and that only for short periods. If, for instance, there was a slight rehydrostatic balance to offset the resistance of the wax to flow, and then a condition of unstable equilibrium was obtained. This was because the resistance of the wax and also its density were not constant, but varied with the time it was exposed to centrifugal force. If, for instance, there was a slight reduction in capacity, this permitted the wax to remain in the rotor longer, with the result that it became more dense and offered more resistance to flow, both of which caused the wax layer to become thicker. Thus the action became cumulative, resulting in overcrowding the rotor with wax.

MR. JONES was to present his paper on Thursday, Oct. 11, at the first meeting of the Institute of Petroleum Technologists, held in conjunction with the International Petroleum Congress, Tulsa. —Editor.

While the above uncertainty of operation can be minimized by using a centrifugal of much lower centrifugal force, the softer wax obtained and the lower yield of oil make it undesirable.

Solid Discharge

All of this trouble was soon overcome by the invention of the so-called "solid discharge." A stratum of a third liquid substance, heavier than either of the two separated substances, was maintained within the rotor. This served two purposes. One of these was the provision of a frictionless surface on which the wax might float and flow. The second and more important was the provision of a uniform and non-resistant liquid with which to form a hydrostatic balance with the wax-free oil layer in the bowl. The rotor was then adjusted, as if the wax were not there, so as to give a maximum thickness of oil layer without allowing any oil to discharge with the carrier liquid. Any separated wax formed a thin layer between the oil and carrier liquid and soon leaked out with the latter. The operation became entirely independent of the condition of the wax and a stable equilibrium was obtained instead of an unstable one.

Calcium-chloride brine refrigerated to the same temperature as the chilled oil was used as a carrier liquid, and fed in such small quantities as to make its presence evident in the wax discharge.

This development of the solid discharge centrifugal rotor with the use of a carrier liquid marked the beginning of the commercial use of the centrifuge in the production of bright stock.

Top Feed

Since this original development an improvement of practical importance has been made in the method of maintaining the stratum of carrier liquid. Formerly it was fed to the rotor with the chilled oil, flowed through the rotor at a very low rate and discharged over the inner edge of a ring on the rotor. This discharge was kept at a minimum. The writer has replaced the feed in contact with the chilled oil by a jet of carrier liquid directed within the above mentioned ring. This is known as the "top feed." When the rotor is empty the carrier liquid flows into it downward instead of upward, but once the rotor has been filled to the edge of the ring any further addition pours out over the edge of the ring. This avoids any necessity for refrigeration of the carrier liquid, in consequence of which the economic prohibition upon supplying heat to the wax cover is eliminated, so that the wax may be melted upon its discharge and readily conducted from the centrifuge, also it avoids admixture of the carrier liquid with the chilled oil. This arrangement has elimniated the tendency to produce sometimes a slight cloud in the finished oil and to interfere to a certain extent with wax separation. A higher yield of oil and a better cold test are thus obtained.

Chilling

The effectiveness of the centrifuge in removing the wax from the chilled oil is entirely dependent on the manner in which the diluted oil is chilled. We have found that the most satisfactory method is as follows: A tank provided with brine circulating coils is used as a container for the oil mixture. The coils extend from top to bottom of the tank and are either grouped at the center of the tank or extend around the wall, leaving the center clear. Either arrangement produces a natural convection current down around the coils and upward through the remaining space.

The oil mixture is heated to about 100° F. until all wax is in solution and all moisture settled out. The mixture must become bright, otherwise a faulty precipitation of wax is likely to occur. The mixture is then transferred to the chilling tank. Brine is circulated through the coils at a temperature not more than 10° F. lower than the oil. This differential is carefully controlled so as to give a chilling rate to the oil of about 3° F. per hour. Such control is easily accomplished as follows: A circulating pump is put in series with the coil in the tank, continuously recirculating the same brine through the coil. A regulated quantity of cold brine from the brine cooler is admitted to the suction of the pump and an equal quantity of warm brine withdrawn where the coil leaves the tank. Every hour the oil in the tank is turned over by a slow moving agitator. This insures an equal distribution of temperature and precipitated wax.

Chilling is continued until the desired temperature for centrifuging is reached. Chilling by the above method to —10° F. and centrifuging at that temperature

will produce a bright stock from most crudes of 15° F. cold test.

Chilling at a slower rate than that given above has shown no advantage in cold test and is more expensive in equipment. More rapid chilling causes an increase in cold test, the increase becoming more rapid as the time of chilling is reduced. A rate greater than 5° F. gives poorer results than chilling more slowly and centrifuging at a higher temperature.

If instead of maintaining a small differential between the brine and oil, slow chilling is accomplished by allowing a small quantity of brine to enter the chilling coil, a portion of the oil is exposed at once to a low temperature resulting in what we have termed "shock" chilling. As a result the wax is precipitated throughout the oil in a colloidal state, and cannot be separated by gravity or centrifugal force.

It is important, therefore, in order to insure an economical use of refrigeration and an effective use of the centrifuge, first to dissolve the wax completely and then slowly and uniformly chill the mixture to the required temperature for centrifuging.

Dilution

Three conditions must be fulfilled in the dilution of the cylinder stock: First, the viscosity must be sufficiently reduced to permit crystal formation rather than colloidal precipitation, and to permit the removal of the wax after it has precipitated. Second, the density of the mixure must be reduced below that of the wax. Third, sufficient volume of liquid must be provided for free suspension of the precipitated wax.

The first two conditions are easily accomplished by using one and one-half volumes of naptha of about 60° Bé. With some cylinder stock, however, such as those from Wyoming crudes, the wax content is so high that the wax particles begin to crowd each other, joining together before precipitation is complete. Satisfactory separation is then difficult. In some such cases the use of slightly more naptha than usual is sufficient; in others, better results can be obtained by precipitating half the wax, removing it by centrifuging, and then completing the precipitation by further chilling and recentrifuging.

Removal of Protective Colloids

The presence of asphaltic material and coloring matter in an oil will lower its cold test. A black cylinder stock which has a cold test of 40° F., after acid treatment and filtration will have a cold test of 85° F. These same substances interfere with the precipitation of the wax in the production of bright stock. If a black cylinder stock be put through the dewaxing process, its cold test may be reduced to 10° F., but on treating to a light color, it will rise to 35° F. It is common practice, therefore, in order to carry on the dewaxing most effectively, to refine the cylinder stock to the required color before dewaxing.

Yield

With the cold settling process, it was common to secure a yield of only 70 per cent. of bright stock with a cold test of 50° F. The centrifugal separation of the precipitated wax gives a yield of 85 per cent. of 15° F. cold test bright stock, because of the greater freedom of wax from oil.

Other Oils

Extensive investigations have been carried out to determine the possibilty of using the centrifugal process for the general removal of wax from all lubricating stocks. The results have shown that the process is readily applicable to any stocks containing the wax in an amorphous form, but that additional considerations are involved in the removal of wholly crystalline wax. It has been found especially applicable to what we have designated as "long residuum," that is, a steam-refined still residue, similar to cylinder stock but amounting to about 30 per cent. of the crude—all of its lubricant—instead of 15 per cent.

The long residuum is treated, as is cylinder stock, for wax removal. A yield of 84 per cent. of dewaxed oil and 16 per cent. of wax are obtained. The finally dewaxed oil contains all of the lubricating content of the crude, without any having been broken down by a cracking distillation as is necessary when neutrals are dewaxed by pressing. The dewaxed residuum may then be split up by distillation into neutrals and bright stock. It is possible by this method of refining to obtain 10 per cent. of 200-sec. viscosity neutrals and 15 per cent of bright stock from a Pennsylvania crude, when formerly not over 5 per cent. of 200-sec. viscosity neutral was obtained. The cold test of the neutral will be below 25° F. and that of the bright stock below 15° F.

Pledges Opposition To Investigations

Staff Special

TULSA, Oct. 10.—A pledge that he will exert his best efforts to prevent harassment of the petroleum industry by congressional investigation and hampering legislation was made by E. B. Howard, representative from the first district of Oklahoma to conrgess, in an address delivered today before the International Petroleum Congress. He said that he expects to devote a majority of his time to the task of giving congress the true facts of the industry as opposed to the malicious propaganda which is the basis of proposed investigations and legislation.

"Legislation detrimental to the safe, business-like operation of the oil industry is just as harmful to the citizens of Nebraska, Iowa or our great cities as it is to the industry," Mr. Howard asserted. "I am unable to analyze the public psychology which calls for repeated investigations of the oil business and which seems to put forth an insistent demand for legislative restrictions upon one of the few great industries which has really shown itself competent to supply its commodities at reasonable prices under varying conditions of prosperity and distress."

Mr. Howard defended the industry of charges of profiteering by pointing to its record in the war and to the fact that since the war the price of gasoline has consistently been below the level of other commodities. At the time this year when the Massachusetts state Chamber of Commerce was demanding an investigation of gasoline prices the index figure for motor fuels was far below that of the principal manufactured articles produced in that state, Mr. Howard asserted. He cited figures furnished by the government bureaus to support his argument.

"I believe in the law of supply and demand, and I believe that it should be permitted to work in the oil industry as well as in others but there are certain other considerations which must be taken into account in the case of oil. Since we are under the necessity of accumulating stocks in times of large production to take care of the famine which may always be just around the corner, the public should not demand drastic price cuts immediately when stocks begin to accumulate. The consumer should not demand a paradise in the case of this limited natural resource every time that production exceeds consumption, because, if such were permitted, the industry would be given no opportunity to provide, in times of plenty, for the approaching times of famine.

"In my opinion, the economic history of the oil business does not justify hostile governmental interference. The only legislation of which I can conceive with reference to the oil industry, which would be constructive and not destructive, would be appropriate enactments in both the Federal Congress and the State Legislatures whereby the members of the oil industry would be permitted to co-operate for the conservation of petroleum without danger of being indicted for violation of the anti-trust law. During the past summer, this valuable natural resource has been wasted by overproduction and gluttonous consumption at ruinous prices. The public may have enjoyed this for a time but the public will pay the penalty in the end. There was no way by which the oil industry, which wanted to conserve the supply, could legally do so. At the first suggestion that such an attempt be made, there were threats of prosecution by both federal and state governments. This is a short-sighted and erroneous governmental policy. In view of the great need for conservation of petroleum for future use, the governmental attitude should be the exact opposite, and the oil industry should be authorized by law, both state and federal, to co-operate in times of overproduction in any reasonable program of curtailment of production in order that the excess oil may be left in the ground until needed by the public. During the past summer, some two or three per cent of the wells in the United States were producing half of the oil. These wells were located in seven or eight flush pools. If the oil industry had been authorized by law to co-operate in holding down the production of these pools, petroleum products could have been marketed at reasonable prices and in an orderly manner and the country would have been assured of a more adequate supply for future use produced in an orderly manner from the known pools as occasion demanded."

BURKBURNETT, TEX., Oct. 16.—B. P. Kehoe and W. R. Robinson, both formerly connected with the Transcontinental Oil Co., are in charge of The Crystal Petroleum & Refining Co. of this city. The company has opened a bulk storage plant here and compounds lubricating oils and greases. It retails gasoline in tank wagons in the city, according to Mr. Kehoe.

Use And Developments Of Centrifuge For Petroleum Refinery Emulsions

By Eugene E. Ayres, Jr.
Sharples Specialty Co., Philadelphia

(Presented At International Petroleum Congress)

THE centrifuge has come into general use in the oil fields and in the establishments where lubricating and fuel oils are used. Probably centrifugal machinery will be found more useful in the refinery when the operators are more familiar with the principles of modern centrifugation and when centrifugal engineers better understand the refinery emulsion problems.

It is not generally realized that centrifugal force and gravity have two distinct functions: First, subsidence wherein the suspended globules are brought into contact; second coalescence (when this is possible) by rupturing the films around the globules. In the case of a water-in-oil emulsion, an exercise of the former function alone would yield: (1) oil, free, or as free as desired, from water; and (2) a concentrated water-in-oil emulsion—concentrated in the sense that it contains a relatively large percentage of the internal phase. An exercise of both functions will yield: (1) water-free oil and (2) oil-free water.

Centrifugal force is much better than gravity for subsidence because, in the case of industrial emulsions where the suspended globules are visible under a microscope, subsidence is directly proportional to the force applied.

Centrifugal force is only slightly better than gravity for coalescence. A minute trace of a proper reagent will immediately do more to nullify the interfacial surface tension opposing coalescence than an indefinite application of the highest attainable centrifugal force. No mathematical analysis has been made to explain the failure of high centrifugal force to induce a decidedly more rapid and more complete coalescence than is obtained by gravity.

The adjustment of the centrifuge rotor depends more on the extent of coalescence that is desired or is possible than on any other factor. One reason for this dependence is to be found in the curious relation between the specific gravity and the hydrostatic pressure of emulsions. The continuous centrifuge works on the U-tube or Florentine flask principle, and for homogeneous liquids the ratio of liquid depths is assumed to be inversely equal to the ratio of specific gravities. But in the case of emulsions where the globules have a diameter of one micron or larger, the balanced depths are not inversely proportional to the mean specific gravities. For example, suppose we centrifuge an oil-in-water emulsion whose continuous water phase has a specific gravity of 1.00, while the oil is 0.80. If the emulsion is of such a character as to permit a coalescence of oil globules, we may expect 0.8 inch of the water phase to balance 1 inch of oil. If the oil globules cannot be made to coalesce, we may so operate as to form a concentrated oil-in-water emulsion containing 70 per cent of oil. The mean specific gravity of this emulsion should be 0.86, and it would be natural to expect 0.86 inch of water to balance 1 inch of emulsion. Experience has shown that this is not the case; we are likely to require 0.96 inch of water to balance 1 inch of this emulsion.

MR. AYRES' paper was to be presented on Thursday, Oct. 11, before the first meeting of the Institute of Petroleum Technologists, held in conjunction with the International Petroleum Congress, Tulsa.—Editor.

Adjustment of the centrifugal rotor depends on the type of the emulsion. In the case of water-in-oil emulsion, water is assumed to be heavier than oil. Subsidence by centrifugal force will, therefore, move the water globule outward. If the globules coalesce when they come into contact, a continuous water layer will be formed at the periphery. The coalesced water layer is equivalent to "dead" space in the sense that this water layer requires no more work from centrifugal force and yet takes up room in the rotor, thus reducing the capacity of the rotor for the oil phase. On the contrary, the suspended oil globules of an oil-in-water emulsion are presumed to be lighter than the water and will therefore be moved inward by centrifugal force. If the oil globules coalesce, an oil layer is formed at the surface; in this case it is the oil layer that is dead space. If coalescence is not obtained and the suspended globules are merely brought into close contact, the concentrated globules form a viscous, or gelatinous, layer that may also be regarded as dead space.

There are cases in which a partial coalescence may be obtained by centrifugal force. Such cases are frequent with water-in-oil emulsions and rotors are specially designed for this condition. No rotor has yet been designed to take advantage of a tendency to partial coalescence in oil-in-water emulsions because there has been no demand for such an operation. Where a partial coalescence is to be obtained (for water-in-oil emulsions) a high percentage of internal phase will require an adjustment different from that required by a low percentage of internal phase if the maximum of coalescence is to be obtained in each case.

In this connection we must take into account the viscosity of the oil and the interfacial tension of the emulsion. If the surface tension is low, the globules will coalesce when they are brought into contact by subsidence. If the viscosity is high, subsidence will be slow. With a low surface tension (a weak emulsifying agent) and high viscosity, the largest possible volume of oil must be maintained in the rotor; conversely, if the viscosity is low (and subsidence is rapid) while the surface tension is high (and coalescence is difficult) it is not necessary to maintain so high a volume of oil in the rotor, but the rotor must be adjusted to maintain a relatively large volume of intermediate emulsion on which centrifugal force can work to accomplish coalescence.

The adjustment of the rotor must be governed by the quality of results desired by centrifugal resolution. In most industrial applications, results are not perfect. It is usually possible to obtain perfect results from a purely technologic standpoint; but to achieve this perfection it may be necessary to sacrifice economy. In one case of the resolution of a water-in-oil emulsion, four adjustments gave the following results, with corresponding maximum capacities:

	Water	Oil	Capacity, Barrels Per hour
1.	Free from oil	1 % moisture	1.0
2.	Free from oil	Free from water	1.5
3.	1% of oil	Free from water	3.0
4.	1% of oil	1 % moisture	15.0

Adjustments 1 and 2 show that a change of adjustment may produce a better result from a higher maximum capacity. If the results from adjustment 4 are industrially satisfactory, that adjustment must be selected because of the economic advantage.

Suppose we have an oil-in-water emulsion from which we desire to recover the maximum yield of oil. If subsidence and coalescence are both difficult, the rotor must be adjusted to hold the maximum volume of water and a minimum volume of concentrated emulsion. In other words, in making adjustments coalescence must be sacrificed for yield and a discharge concentrated emulsion obtained instead of free oil. The importance of correct rotor adjustment will be realized when we state that the change of one of the rotor dimensions ⅛ inch may convert a prohibitively expensive operation into an attractively profitable one.

B. S. Accumulations

When "cut production" is dehydrated in the field by centrifuging or by chemical methods, the crude is not made perfectly dry but is merely reduced to 1 or 2 per cent moisture. When this oil is stored for a time at the refineries, the emulsion gradually accumulates in the storage tanks. The accumulation is particularly certain to occur if reagents have been used in the field, be-

cause the reagent has counteracted the emulsifying element of the crude.

The method of resolution depends on the percentage of inorganic matter. If the inorganic matter is low, say not over 2 per cent, it is possible to centrifuge direct. In the absence of wax it is desirable to centrifuge at as high a temperature as feasible to reduce viscosity; when wax is present, a high temperature is necessary to melt the wax.

If reagents have been used in the production field, an addition of reagent to the refinery accumulation before centrifuging will be without value. Otherwise the use of reagents may be of value in the case of high-viscosity crudes.

When the inorganic percentage is high, it is advisable to free the emulsion from the bulk of the solids before attempting centrifugal separation. To accomplish this the emulsion may be agitated with a solution of caustic soda, soda ash, or sodium silicate, then heated and settled. A portion of the solids may be taken up by the aqueous layer and another portion will collect between the settled layers of oil and water. Supernatant oil, after such treatment, contains a lower percentage of solids and water and can be efficiently freed of both by centrifuging.

Any water-soluble colloid will tend to break the water-in-oil emulsions. Examples of water-soluble colloids that have been used for this purpose are common soap, rosin soap, the so-called soap from petroleum, starch, glue, albumen, casein, and the gums. The soaps of the heavy metals will stabilize water-in-oil emulsions instead of tending to resolve them. The most efficient reagent that we have used for resolving water-in-oil emulsions is sodium-rosin soap containing not less than 60 per cent dry matter. This substance is soluble in oil and can be used to advantage. Aqueous solutions of rosin soaps are no more efficacious than aqueous solutions of common soap or petroleum soap, but such aqueous solutions are frequently used and are often helpful. Aqueous solutions of starch, glue, etc., will be as efficacious as the soap solutions, especially if a trace of alkali (such as caustic soda or soda ash) is added to the solution of colloid. The theory underlying the use of such substances is that the water-soluble colloids tend to produce emulsions of oil-in-water, and if a trace of such substances is used with an emulsion of water-in-oil, the tendency will be to neutralize the stabilizing effect of the hydrophobe colloid present in the water-in-oil emulsion.

Crude Oil Containing Salt Water

When crudes are distilled continuously, it is of particular advantage to remove the salt water as far as possible in order that the salt may not deposit in the still. There has been some question as to whether the salt in the crude petroleum is all in solution in the emulsified water, or whether some salt is not suspended in the oil in colloidal form. We believe this confusion has arisen from the inaccuracy of the method for the determination of salt by igniting the oil in a crucible.

Careful tests on a number of samples of crude have indicated that the salt content of the crude was directly proportional to the moisture content. The tests were made by removing by centrifugal force various proportions of the moisture content and then determining the moisture and salt in the oil. The salt was determined by a method suggested by Ralph R. Matthews wherein the oil is extracted with acetone and water and the extract is titrated. In most cases where, in cut production, the oil is partly dehydrated by heating, any salt precipitated from aqueous solution is in a relatively coarse granular form in which it readily settles out of the oil.

It can be safely assumed that to reduce the salt content of a crude we need merely to reduce the moisture. A crude oil cannot be completely dehydrated by centrifuging except at high cost. Some of the low-viscosity crudes containing under 2 per cent water can be reduced to 0.1 per cent moisture by simple centrifuging at high capacities.

The more viscous crudes, containing under 2 per cent water can be reduced to 0.1 per cent moisture by dissolving in the oil 0.1 or 0.2 per cent of sodium-rosin soap containing 60 per cent or more dry matter. The oil is then centrifuged at high capacities. Oils containing more than 2 per cent water can be reduced to 0.1 per cent moisture, but the cost is higher. High temperatures for centrifuging are advantageous.

Other hydrophile colloids may be substituted for sodium-rosin soap, but the latter has the advantage of being soluble in oil and by diffusing through the oil it comes in contact with the dispersed water globules. After centrifuging, the oil contains rosin soap only in proportion to the moisture remaining in the oil, for the bulk of the soap is in the separated water.

Crudes of very high viscosity cannot be economically dehydrated with rosin soap and centrifuging.

Acid Sludge in Oil

If a lubricating distillate and the necessary proportion of sulfuric acid are flowed independently through a type of centrifugal machine adapted to emulsify thoroughly the acid with the oil, and within the same second to separate the emulsified material and to discharge a sour oil on the one hand and an acid sludge on the other, it will be found that the discharged oil will be practically clear and free from traces of suspended sludge. Furthermore, the discharged oil will be found to have received an acid treat as efficient as the ordinary acid treat in which acid is in contact with oil for a considerable period. But the discharged sour oil, although practically clear at the moment of discharge, will show more and more turbidity until a considerable volume of acid sludge is formed by coalescence and settles out.

This appears to be a case where the viscosity of the oil retards coalescence. In such cases we have not yet seen any reason for treating by centrifugal emulsification and separation. Oils of very low viscosity, such as the kerosene distillates, can be treated in the manner just described with a discharge of a sour oil that will not deposit sludge on standing. In the absence of high viscosity, the coalesence of sludge appears to be complete and immediate.

It may develop that the method of centrifugal emulsification and separation may have some distinct advantage over the usual methods of treating the lighter oils, but the subject has not been exhaustively investigated.

It appears to us that the centrifuge is of greatest value for the separation in some special cases of well coalesced sludge from highly viscous oils. When cylinder stock is treated in the usual fashion and the period of contact of acid and oil is sufficiently great to insure the complete coalescence of sludge, the centrifuge will efficiently separate the suspended sludge from the oil, yielding a sour oil with less acidity than could be obtained by long gravity settling. In general, when acid treats are made in the usual manner and the sludge is permitted to settle out, the supernatant oil may be centrifuged with a considerable reduction in acidity. This is merely because of the removal of traces of suspended sludge that had not settled by gravity. But it has not been found possible to remove all traces of mineral acid from even the low-viscosity sour oils by direct centrifuging.

Emulsions of Sour Oils and Water

In some cases it is an advantage to be able to emulsify a sour oil with water in order that the acidity of the sour oil may be reduced by washing. It is generally supposed that contact of water with a sour oil tends to hydrolyze the contained acid sludge with a tendency to the reversion of color compounds to the oil. Apparently this effect can be minimized, although whether or not the effect can be entirely avoided has not yet been proved. In some cases, however, slight color changes are not regarded as important. For example, when a reduced Mid-Continent crude is acid treated, it is said to be a distinct advantage to eliminate the acidity from the sour oil by some method that will avoid the formation of ash-producing substances. The difficulty with the water wash for Mid-Continent crudes is that a stable emulsion tends to form—an emulsion that will not settle out unless reagents are used. The reagents known to refineries are usually ash forming so that the water wash in this way does not accomplish ash elimination. Other reagents are decomposed by the acidity of the oil and the products of decomposition are harmful.

The emulsions formed when water is agitated with sour oils are of the

ACKNOWLEDGMENT is made to the American Institute of Mining and Metallurgical Engineers for permission to publish papers by Messrs. Jones, Bradley and Ayres. These were prepared for presentation before the Institute of Petroleum Technologists, which is a division of the A. I. M. M. E. Practically all discussion and papers at the Tulsa meeting were under the general heading of "Handling of Oil on Leases."—Editor.

type of water-in-oil and, therefore, require a hydrophile colloid for their resolution. These emulsions are frequently too stable for simple centrifugal separation. They may be resolved by agitating the emulsion with a dilute starch solution and then centrifuging, but the technique is difficult.

We have found it possible to wash a sour oil efficiently without the formation of a stable emulsion by agitating the sour oil efficiently without the formation emulsion thus formed can be completely resolved by centrifugal force. The oils treated in this fashion are clear and dry. When the oils are violently shaken in a 4-oz. bottle with water to which methyl orange has been added no change in color is observable in the aqueous layer, thus indicating the absence of water-extractable acid. However, when oils are tested according to the standard method for acidity, using a 60-per cent alcohol aqueous layer with phenolphthalein as an indicator, and titrating with tenth-normal caustic soda, the acidity value of the washed oils amounts to about ½ c.c normal alkali per 100 c.c. of oil. All of the Mid-Continent treated oils seem to give about this result, which would seem to indicate organic water-insoluble acid. The washing with starch water removes acidity from sour oils apparently to the same extent as contact with finely divided fuller's earth.

If it were considered satisfactory to distill a reduced Mid-Continent crude after such treatment, ash in the still would be completely avoided. If it is considered necessary to complete the neutralization with caustic soda, the neutralization may be made very simply without the formation of a water-in-oil emulsion. A sour oil after a starch wash can be neutralized with a caustic-soda solution of any strength with a quick and complete gravity settling. The caustic-soda solution after settling out is clear instead of being milky. Whether, under these conditions, the soaps formed by the interaction of caustic soda with organic acid are retained in the oil are completely extracted in the aqueous layer has not been ascertained.

For the starch wash about 0.1 per cent by weight of starch has been found to be sufficient. The temperature at which the starch emulsion must be centrifuged depends on the viscosity of the oil treated. With ordinary reduced Mid-Continent crude averaging about 105 Saybolt viscosity at 100° F. a temperature of 200° F. is used to obtain the highest centrifuge capacities and the most economical operation, but operation is practical at somewhat lower temperatures.

The best results have been obtained by emulsifying starch water with the sour oil at normal temperatures, and then warming the oils, centrifuging as soon as the oil has reached the desired temperature. In this way the effect of temperature on the color of the slightly acid oil is minimized because of the brief time during which the oil is hot. The application of the starch wash to the preparation of finished lubricating distillates has received little attention, but there would seem to be some interesting possibilities.

Emulsions of Sour Oil and Caustic Soda

When sour oils are neutralized with caustic soda, the products of the reaction are soap and sodium sulfate, also some free alkali. The emulsions formed are of the type of water-in-oil. The type might be explained by adsorption of the basic radicals of the inorganic salts and alkali present.

The soap would tend strongly to stabilize an oil-in-water emulsion. We conclude that the salt concentration in the aqueous phase is high enough to precipitate the sulfonic soap either in such form as to render it colloidally inactive, or else in the form of a hydrophobe colloid. That the sulfonic soap in such emulsions is distributed in the continuous oil phase is indcated by the fact that mere contact of addtional water with these emulsions will cause the emulsion to break down. The water appears to extract the sulfonic soap from the oil. It is standard practice to percolate water through alkaline emulsions or to agitate the emulsion with successive charges of fresh water.

Acid-treated oils from which all traces of excess sulfuric acid have been removed by efficient water washing or by filtration through fuller's earth can be agitated with caustic-soda solutions to remove dissolved organic acids without the formation of stable emulsions. This may be explained by the fact that no sodium sulfate is present to precipitate the sulfonic soap.

The absence of sodium sulfate probably accounts, also, for the fact that the separated aqueous phase contains no emulsified oil. The petroleum soaps are probably too soluble in water to function as hydrophile emulsifying agents except in the presence of sufficient electrolyte to give them colloidal character.

It is natural that solutions of starch or other hydrophile colloids should not aid the separation of alkaline emulsions. What is necessary for the resolution of an alkaline emulsion is the presence of sufficient water to extract the petroleum soap from the continuous oil phase. There seems to be some advantage in some cases in carrying out the resolution as follows:

From 20 to 60 per cent of water is added to the alkaline emulsion and the liquids are brought into contact by agitation with live steam or mechanical agitators. The hot mixture is then centrifuged at comparatively high capacities. This discharge from the centrifuge will be clear dry oil on the one hand, and reasonably oil-free water on the other. It is possible by this procedure to secure an immediate resolution of the emulsion, which has the effect of improving color and speeding production in the case of viscous oils difficult to wash.

Decide To Meet Later

TULSA, Oct. 6.—The Association of Natural Gasoline Manufacturers has abandoned its plans for a special meeting during the sessions of the International Petroleum Congress and Congress here next week. Officers of the association felt that its members would prefer to hear the addresses of foreign delegates which were scheduled to be given at the same time in the general congress meeting.

The association is planning a general meeting to be held in Texas at an early date. A program is being arranged for the meeting which will be announced shortly.

Accept Doherty Rate For Artificial Gas

SALINA, KAN., Oct. 5.—Salina Kansas will receive its artificial gas service under the Doherty Rate system as a result of action taken by the city commissioners at their regular weekly session in Salina recently when the ordinance was up for final reading.

The action of the city commissioners of Salina was taken following a thorough investigation of the Doherty rate by the Utility committee of the Salina Chamber of Commerce. The city of Salina, which is served by the Salina Light, Power & Gas Co., a Cities Service property, is the first city in Kansas to adopt the Doherty rate as a method of charging for artificial gas service. The Kansas Public Utilities Commission in March of this year ordered the installation of the Doherty rate in all cities in Kansas supplied with natural gas from the pipe lines of the Empire companies.

Following the action of the utilities commission, the matter was brought up before the Salina Chamber of Commerce after which an investigation of the merits of the Doherty rate was conducted by the Chamber of Commerce. Upon the approval of this committee the ordinance was drawn, presented before the commissioners and passed.

The ordinance provides: "That the requirements of the customer shall be determined by the customer after which demand limiting meters may be installed by the company to limit the flow of gas to the requirements agreed upon.

"All customers shall enter into a contract for gas on the above rate for the period of one year. No reductions in the requirements shall be made within the life of the contract.

"That before April 1, 1924, the company shall have installed in or on the line of each customer the necessary appliances required for the operation of the Doherty rate."

Thinks Pumping Not Immediate Problem

TULSA, Oct. 6.—Arthur Knapp, economist for the United Gas Improvements Co., Philadelphia, spent three days of the past week in Tulsa, stopping en route home from the Los Angeles meeting of the American Association of Petroleum Geologists. Mr. Knap had planned to visit Wyoming and Montana on his way but was unable to come through that way because of the floods.

Mr. Knapp gathered considerable information for the company he represents—a buyer of some 10 million barrels of fuel and gas oil each year—on the California situation. While he believes the "edge" is off Califorina, he thinks it will be six months before the decline is great enough to be reflected in available supply and consequently in the crude oil market.

Although many wells may go "dead" in the three flush fields of California from now on, Mr. Knapp believes the fluid level will remain high in them for a considerable time and that pumping will not immediately be the problem that it will when tubing must be set to the lowest level.

Guatemala Is Hopeful Of Development Of Important Oil Fields

By Senor Don Francisco Sanchez Latour
Minister To United States From Guatemala

(Presented At International Petroleum Congress)

THE oil possibilities of Guatemala have thus far not been appreciated in the world at large because until last year it was the policy of the government of Guatemala, which owns the subsoil, to discourage oil development. However, in 1922, the present government enacted a law designed to facilitate the development of the oil resources, which in the opinion of many people are hidden in several portions of the republic. That law gives reciprocal rights to citizens of the United States to secure leases.

The northern half of the republic is as yet considered the most probable source of petroleum because of its folded Cretaceous and Tertiary sediments, the most favorable structures lying in the Departments of El Peten, Izabal, Alta Verapaz and Huehuetenange.

The surface of Guatemala is very mountainous specially on the Pacific side but the coastal regions are not and these consist of sloping plains. The principal mountain range, the cordillera of the Andes, a continuation of the Sierra Madre of Mexico, is just a continuation of the Rocky Mountains and contains many high volcanic peaks some of them being over 12,000 feet high. The main plateau of Guatemala which lies between this mountain range and these of the north, is from 1700 to 6000 feet above the level of the sea, but there are large areas in the Los Altos section which reach altitudes of from six to eight thousand feet. I mention these facts to make it clear that oil found in any of those regions, can in most cases be piped out to the sea coast through gravity and avoiding pumping.

As the fact that the geologic formations of Tabasco and Vera Cruz in Mexico undoubtedly continue through Guatemala, Tabasco lies on our northwestern frontier, and these formations have proved to contain oil, it is only logical that oil exists in Guatemala. As evidence of this it is definitely recorded that there have been seepages found not only in the north but in other parts of the country and it is known that the International Railroad Co. in prospecting seepages found oil in sufficient quantities to make use of it as a lubricant. Seepages have been found in the South-Western part of the republic, near the Mexican border and traced for many miles across the main mountain range in a northwesterly direction. These seepages are said to be of a high-grade oil. Asphalt is found in the Department of Jalapa, on the southeastern side of Guatemala. Seepages exist in Izabal and Alta Veranaz. Indications of oil have been found all along the River Sarstoon from the Atlantic coast to a hundred miles inland.

Where Oil is Expected

The Department of El-Peten, which covers an area of about 17,000 square miles, is the place where we have always most expected to find oil because of well known seepages and indications and it is from these undoubtedly, that centuries ago, the Indians obtained the liquid fuel used by them to keep the "perpetual fires" before their gods. Whilst El Peten is the least explored and least known section of the country, expert geologists have reported that it is the greatest potential oil bearing section in the whole of Central America. It is mostly flat having few mountains and the general slope is towards the Caribbean Sea.

SENOR LATOUR, Guatemalan minister to this country, addressed the International Petroleum Congress, Tulsa, on Tuesday, Oct. 9. A point of interest brought out by the speaker is that Guatemala is interesting itself in the refining business and may build a plant to operate on imported crude oil.—Editor.

I know of at least two companies that have been formed lately in Guatemala with the object of developing the oil industry. One, the Guatemala Petroleum Development Co. financed by Guatemala and foreign capital; the other, the Guatemala Oil Corp, has just been organized with Central American, American and Mexican capital.

May Install Refinery

In Guatemala we have not yet erected a single refinery; but we hope to install a cracking plant before long which will enable us to import crude oil, until we get our own, top it and then crack the residue down to coke. In view of the high cost of gasoline, not only in the interior (in Guatemala gasoline sells at about 75 cents a gallon), but along the well developed coast lands from British Honduras to Costa Rica, where there is a great demand for gasoline, we believe that a refinery located near the Caribbean terminal of the Guatemala railroad would constitute a very profitable enterprise which of course, will develop as local oil production becomes a fact. I think I know of a safe, efficient and economic cracking process that will meet our wants and which will enable us to market high grade gasoline at almost one half of the existing quotation on the imported motor fuel.

The country abounds in timber with the heaviest growth in the sections to which the indications point out as oil bearing. This timber will furnish all that is necessary, at practically no cost, in rig building, fuel and other needs. Unskilled labor too is to be had at what would be considered by you gentlemen a ridiculously small figure. The moderate climate and the tropical growth of foodstuffs makes living an easy proposition for the native laborer. Roughly stated one could say that a laborer gets between fifty cents and a dollar a day on the Pacific coast and up to a dollar or a dollar and a half on the Atlantic Coast.

Transportation Chief Problem

The transportation facilities are about the most serious problem. The Continent is crossed in Guatemala by a railroad and there is an important branch that traverses the entire south coast to Mexico. On the Pacific coast there are no navigable rivers. On the north coast however, the Rio Dulce leads into the great Lake of Izabal which is fed by rivers navigable for some distances. The rivers Motagua and Sarstoon are also navigable rivers on that coast. But the general slope of the land on both coasts lends itself to pipeline transportation. Although the transportation of machinery would have to be made mostly by ox-carts and mules, for distances of thirty or forty miles sometimes, yet we transport the heaviest kind of coffee and sugar plantation machinery that way without much trouble; and this machinery has to go to places fully as difficult to reach as any in the republic.

I have with me several copies in English of the new petroleum law and will be glad to give one to any of you gentlemen who desire one. I have already referred to the fact that there is a reciprocity clause which allows Americans to obtain leases, and leases have already been granted under this reciprocity provision. You will also find provisions for free imports of necessary machinery, equipment, and such subsistence stores as are not obtainable in Guatemala. You will also find data on the terms of leases, rentals, royalties, etc., etc.

Those of you who are at all familiar with Guatemala and the relations between that republic with the United States realize that Guatemala not only entertains cordial sentiments of friendship for the United States, but that the Republic has a record for fair dealing and for being disposed to extend to citizens of other countries that same justice and liberality of treatment which she accords to her own citizens. In fact, the policy of Gautemala in that regard is not surpassed by any country in the world, in my opinion, not even by the United States, for the ideals of which country I have the most unbounded admiration.

The cordial relations which have happily always existed between Guatemala and the United States, and which are, I may say, traditional with us, for I think Guatemala is one of the best friends that the United States ever had, have been maintained and enhanced by the splendid service of the present American Minister to Guatemala, His Excellency Arthur H Geisser, of Oklahoma.

Peru's Oil Development Has Been Rapid; Its Future Is Bright

By Dr. Santiago F. Bedoya
Secretary Of Peruvian Embassy

(Presented At International Petroleum Congress)

PERU, whose superficies is equal to that of the state of Texas, Arizona, Nevada and Utah combined, that is to say about 600,000 square miles, is divided into three very well-defined geographical regions: the Coast, of a varying depth of from 20 to 80 miles; the Highlands of the Andes, crossed by the highest railroad in the world, and third, the vast tropical region termed "Montana," scarcely explored and which extends to the east of the Andes.

Peru, generally speaking, is a tropical country, basking in brilliant sunshine. Along the coast, for more than 1500 miles, it hardly ever rains, while the diversity of the regions, the varying elevations from the sea level to the highest peaks of its mountain ranges, make of my country, indeed, the present day Land of Promise.

In agriculture, it produces from wheat in the Highlands to sugar cane, rice and cotton in its valleys. Its mountains produce in abundance that "Black gold" as well as the richest hardwoods; while the animal kingdom is represented by almost all the varieties known to zoology. Its chief wealth, however, consists in the bewildering diversity and abundance of its minerals; the sands of its rivers are weighted with gold, while silver flows from its rocks.

An incident of the conquest of Peru by the Spaniards, will adequately express this surprising richness. The secretary of the commander of the Spanish invaders says, in his diary: "the Inca said he would give the Spaniards who had preached to him, much gold and silver: the Governor asked what amount he would give and within what time. The Inca said he would give, in gold, an amount which would fill a hall 22 feet long by 17 feet broad and to the height of a white line half way up the wall ..... he said that up to that point he would fill the hall with various gold coins, jugs, pots and other vessels, and that as respects silver, he would give the quantity twice over, and that this he would fulfill within two months. Sixteen days later, 300 loads of gold arrived, and some days after 200 more, and then 60 loads of low grade gold in the shape of plaques, which appeared to have been taken from walls." (Francisca de Xeres, Conquest of Peru.)

Another incident, which refers to the mining region of Cerro de Pasco, the seat of important American copper mining and smelting companies, is the following: "An Indian named Huari-Capcha, a shepherd of the Paria estate, happened to be one day with his flock at a point called Santa Rosa, and collected some straw to feed the fire at which he intended to warm himself through a stormy night. The fire melted silver threads out of the stones, to his astonishment and delight." He carried word of his discovery and with some friends started work in the mine which was the starting point of one of the most important mining districts of Peru.

Oil Has Promising Future

So much for gold and silver, though the same occurs with regard to petroleum. Its presence is known along the whole coast, barely a few miles inland, from north to south, on our high tablelands and in our mountain ranges. Mr. Deustua, a Peruvian engineer who has specialized in this product, states that though Nature has lavished her other gifts on Peru with so bountiful a hand, providing her with so many sources of wealth, none shows a more promising future than the oil industry, still, however, in its infancy, especially at the present time when the ever increasing application of this product has brought about considerable differences between world demand and production. Mr. Deustua analyzing world fuel statistics says: "The future world supply of petroleum undoubtedly raises a question of the highest international importance and of considerable significance for Peru, placing it in the very fortunate position of making the various deposits yield an immediate and highly remunerative source of revenue."

MR. BEDOYA addressed the International Petroleum Congress, Tulsa, Tuesday morning, Oct. 9. His address embodies considerable information upon the laws governing petroleum in the South American republic which has been exploited more for this mineral than has any other nation in that continent. Dr. Bedoya was the official representative of his government at the Congress.

—Editor.

Historical

The origin of Peru is lost among the mists of fable and legendary lore. The Incas were the inhabitants whom the Spanish conquerors found in occupation of the country, about 1531, and they had been established there for over 500 years. These people made use of "a certain mortar or cement in their buildings, composed of gypsum gravel and pitch, which hardened rapidly and welded the stone block very easily"; while the Indians of the region of Lake Titicaca lighted their ceremonies by means of links, the extremities of which had a bundle of wool steeped in the liquid petroleum which was found flowing from between certain rocky formations in that same region. During colonial times, the Spaniards made use of a thick substance, which they termed "pez" or "copey"—pitch or bitumen—which was no other than tar or the residuum of petroleum, of greater or lesser consistency, and which, due to a natural process of evaporation, was found covering great superficies of a district in one of the northern provinces of Peru named La Brea, from this same substance.

The Spaniards employed it extensively to paint the bottoms of their ships and to varnish the earthenware vessels and wooden barrels which were used for the storing of alcohol, rum, etc. In 1860 refined petroleum was imported for the first time in Peru and its superior advantages were immediately manifest. This fact greatly encouraged the owners of the lands where this product is found, the development of the petroleum industry dating from this time, an industry which has increased so rapidly as to place Peru among the great petroleum producing nations, although, so far, only those deposits found on the sea coast have been worked. It is easy to appreciate what our position, as a petroleum producing country, will become when the sources in the southern Highlands and in the Interior are tapped.

Petroleum Legislation and Regulations

Petroleum deposits are regulated in Peru through the Mining Code, though at the present moment the House of Representatives has a special bill under discussion, already approved by the Senate, dealing with this subject. Our petroleum legislation is built upon the following principle: petroleum and similar carbohydrate deposits, in whatever form they may occur, are the property of the State, even though the surface land belongs to private individuals or concerns.

According to the Mining Code, which comprises the laws in force since 1900, grants of petroleum bearing lands are made upon application following a declaration respecting the discovery of the deposits, provided such action is not detrimental to the interests of third parties. The law does not require, for the granting of a concession, that previous proof be furnished of the occurrence of petroleum. It is considered sufficient if the expert, who is commissioned to survey the land containing the concession, is satisfied with the probability of the occurrence therein of the product.

Once the survey of the concession has been effected and possession thereof given to the applicant by the proper official, who is termed a Delegate of Mines, that is to say a judge who has charge of mining matters, the concession is thereupon submitted to the gov-

ernment for approval and confirmation. Once such approval has been obtained, the concessionary may hold his concession indefinitely, and even abstain from working it, always provided that he regulaurly pays the mining tax upon the number of lots which may have been granted to him. The grant includes the right to work and the unrestricted use of the substance contained within the perpendicular lines bounded by the superficies of the lot.

The law likewise recognizes transitory or limited concessions, termed 12-month exploration grants, which may be extended for one additional year, and dealing with an area embracing not less than 60 nor more than 600 lots. These latter concessions may become permanent upon being divided into parcels of 60 lots each. The ministry of Development (Fomento) is the department to which application is made for, and which grants the right of, exploration and exploitation. This department likewise issues title to such concessions once they have been approved and are entered in the Record of Mines, which is the official register where such property is recorded and which is published on the 31st of May and 30th of November of each year.

The unit adopted for oil concessions is termed a "pertenencia" or lot that is a square 200 metres deep. There is no limit to the number of lots which may be granted because, though the maximum number allowed is only 60 contiguous lots, the law does not forbid the granting to one applicant of several concessions of 60 lots each. All that the law requires is that such lots be grouped to form a rectangle.

It may be interesting to mention the general lines of the process to be followed in the application for an oil concession.

The petitioner sends in a written application to the Mining Delegation (Delegacion de Mineria) describing as accurately as possible the location of the deposit, mentioning the name by which it will be known and the number of lots it consists of, a revenue stamp of half a pound sterling (about $2.20) being affixed to the document, which payment is in the nature of a denouncement tax. The official then issues the necessary acknowledgment of the denouncement and publishes a notice during three consecutive days to this effect, both in the newspapers of the capital and in those of the locality where the deposit may be situated, while information of the same nature is posted on large notice boards outside the offices of the department having authority in these matters.

Three months from the date when the official acknowledgment was issued, possession of the deposits is then applied for, when the official, together with the surveyors, the applicant and such persons as may have been notified in advance, meet on the ground, proceed with the survey and delimitation of the concession. It should likewise be noted that before final approval is issued proof must be submitted that the applicant individual or corporation is duly inscribed in the Mercantile Register.

Taxes

According to the law at present in force, the persons to whom such grants are made are required to pay to the State, as mining taxes, the sum of £1-5-0 per lot, half yearly, or £3-0-0 a year (about $12.60) so that their rights may not lapse. Concessions for exploitation purposes pay a tax of one "sol" per hectar, or four "soles" per lot (about $1.68). The same amount must be paid in case an extension is solicited, which can only be granted for one additional year.

The mining tax becomes due five months subsequent to the date when the judge shall have issued the first acknowledgment, and it should be paid up at the time the concession appears published in the Record of Mines (Law No. 2626, December 13, 1917).

Should the owner, once the concession has been registered, fail to pay the government tax for one half year, he is allowed to pay this later, together with an added percentage, according to the length of time of the delay.

During the months of February and August, a publication termed the General Record of Mines is issued, which contains a list of all concessions which may be denounced, either owing to nonpayment of taxes by the owners or because the latter have decided to abandon them; such concessions may therefore be granted anew to other applicants.

This legislation, however, will shortly be considerably added to through the passage of the law which is being at present discussed by the Peruvian Congress, thus bringing it in harmony with the most recent mining legislation of other countries.

Development Rapid

I need not burthen you with a technical description of the characteristic features of Peruvian oil, because, for one thing, I know that these are well known to you; but I would like to remind you of the rapid development of this industry in Peru. While we only produced 37,000 metric tons in 1903, commercially valued at about $624,432.20 in 1913 we were producing 348,694 metric tons, with an approximate commercial value of $9,879 613.92. In 1920, Peru had risen to the ninth place among the important oil producing countries, for our production rose to about 700,-619 tons. With regard to the last three years, the Commercial Attache to the American Embassy in Lima writes:

"The growth of the Peruvian fuel oil trade during the past three years is quite notable. The Peruvian official government statistics of petroleum refining for 1922 show a total production of fuel oil for that year of 282 512 cubic metres or approximately 1.777 000 barrels. The domestic petroleum gives an exceptionally fine quality of fuel,".. adding, when speaking of its industrial application: "An important development in this line is recent substitution of the native oil in place of coke in the largest smelter of the Republic. The Southern Railway of the Republic is gradually changing to fuel oil; the Central Railway has been a large consumer for several years. Many other industrial enterprises now use native product as fuel, to such an extent that the demand for foreign fuel oil has greatly diminished."

In 1922 our production gave us eighth place in the statistics of large producers, for we outdistanced Poland and produced more than India and Rumania together.

The principal concerns which exploit our deposits are the International Petroleum, the Lobitos Oil fields, Limited and F. G. Piaggio who have all obtained the most gratifying results.

Briefly summarized, therefore, in addition to the wealth of every kind which Nature has bestowed on Peru petroleum has been proved to exist practically all along its coast; the greater development of this industry constitutes one of the country's most valuable factors in its economic progress, while the laws which regulate its exploitation are of the most liberal nature; the one and only restriction consisting in a refusal to grant the right of exploitation to aliens within a zone of fifty miles from its frontiers, a restriction imposed for reasons of national safety. In this and in every other field, Peru opens wide its doors to foreign capital, which is accorded the fullest guarantees.

Empire Extends Wire Lines In Kansas

BARTLESVILLE, Oct. 5.—Plans have been approved for the extension of the Empire companies' telephone and telegraph system over the entire Greenwood county field, according to announcement made in Bartlesville this week. The extension means the stringing of more than 100 miles of wire.

Oil Hill, Kan., telegraph line will be extended to include the various towns in Greenwood county giving telegraph service to Sallyards, Teter, Thrall, Winegar, Clopton, Seeley and Madison. Telephone service under the new extension will include all places with the exception of Sallyards. However, telephone communications to this point can be handled with the co-operation of the telegraph operator.

The extensions means a great deal to the Empire companies in the transacting of the companies' business in the Kansas district. The Empire has much acreage in Greenwood county, but has only partially developed this territory.

Although the Empire has delayed making much headway in the development work in this territory because of the general condition of the petroleum industry, the step to obtain thorough telephone and telegraph communication throughout the new field in Kansas means that the Empire companies are making preparations to resume much more active operations in the Greenwood county territory than they have heretofore conducted.

SAN FRANCISCO, Oct. 5.—W. E. Creed, president of the Pacific Gas & Electric Co., the Columbia Steel Co., the East Bay Water Co., and other western corporations, has been elected to the directorate of the Associated Oil Co. He takes the place of Frank G. Drum, who died about a month ago.

BARTLESVILLE, Oct. 5.—The Empire has a location on the L. A. Wilson farm, in the northeast corner of Lot 7, block 26, in Archer county, Tex. This is an offset to the Riner-Bailey producer brought in a few days ago.

SAN FRANCISCO, Oct. 4.—J. Elmer Thomas, geologist, of Chicago, stopped in San Francisco on his return home from the Los Angeles meeting of the American Association. His return trip was via Casper, Wyo., and other northwestern points.

Doherty Uses 50 Salesmen In Pushing Domestic Oil Burners In Toledo

By Roger B. Stafford
STAFF REPRESENTATIVE

TOLEDO, O., Oct. 4

A SELLING campaign which like the morning dew blankets a large territory, is being conducted in Toledo this fall by the Toledo Edison Co. in its promotion of the use of domestic oil burning heating equipment.

The Toledo Edison campaign is perhaps the most comprehensive and extensive ever undertaken in pushing domestic heating equipment. Not a block in Toledo or suburbs is being overlooked. Not a home owner of moderate or more affluent means, apartment house owner or church board will escape approach by at least one of the corps of 50 salesmen now on the streets for the Edison company.

This company is a public utility organization. At present it is interested primarily in the sale of gas and electricity but shortly through a sister subsidiary of the Cities Service Co. it will be interested indirectly in the sale of furnace oil.

The sale of heating plants is a secondary proposition so far as revenue is concerned but, of course, unless the company builds up an outlet for its merchandise by means of new uses it cannot hope for continued expansion.

Gas Supply Dwindling

In years past Toledo had been a large consumer of natural gas for heating purposes. But the Ohio-Indiana gas fields from which it drew its supply are rapidly being depleted. After due consideration of this fact several years ago, the company looked about for means of still supplying its customers with heating facilities while diminishing the amount of gas used by each householder.

The heavier burning oils seem to be the proper medium by which this demand for a clean, convenient fuel might be met. The next thing was to get a burner which it could recommend to its customers. This burner, it was determined, must use fuel with reasonable economy in relation to the cost of coal, it must require a minimum of attention from the owner, and it must be as near fool-proof as is possible for any mechanical appliance to be.

About three years ago, Edison engineers started a number of experiments with several domestic heating plants. These plants were put to all sorts of tests under close observation. It soon was decided that one with mechanical feed and draft only could be approved and backed by the company's financial resources and reputation. With millions of dollars invested in gas and electrical plants in and about the city, no "fly-by-night" proposition could be undertaken.

Mechanical Burner Chosen

Experiments were made with several burners that came within the bounds laid out by the company's own engineers and the Williams Oil-O-Matic was finally decided upon, not because it had greater ability than several other burners—the manufacturers will probably dispute this statement—but largely because it was able to burn a much heavier grade of oil than some of the others and therefore would cut down the fuel bills of users to a considerable extent.

The Toledo Edison Co. maintains a corps of salesmen pushing all sorts of gas and electrical appliances, such as stoves, water heaters, irons, mangles, washing machines and even curling irons. The city and suburbs are divided into districts with from 1500 to 2500 homes in each district. These salesmen last April added the heating plant to their list of products but their efforts consisted mainly in the compilation of names of prospects. When a home or apartment house owner showed even a slight degree of interest to them, his name was given to a general salesman who sought to close the sale.

The work went rather slowly through the summer but the number of attentive ears multiplied rapidly with the first breath of biting fall air off Maumee bay. So far this fall 34 plants have been installed and delayed deliveries have prevented bringing the total up to 100, according to E. H. Donoher, the Williams agent here. So far the closing of all sales has been intrusted to Harry A. Fowler of the Edison company but the work has attained such volume that plans are afoot to apportion the prospects among other salesmen.

The burners are sold on a deferred payment plan, installments extending over three years. The Williams agency here supplies the plants to the Edison company in large quantities and makes the installation. As soon as the plants are installed and tested, the Edison pays the agent in full, carries the account without interest charges to the consumer and assumes responsibility for the successful operation.

A service department is maintained with experienced mechanics doing the adjustments which may be necessary until the owner becomes fully acquainted with the burner. Service is free for a year but no charge may be made for minor adjustments after the first year.

Underwriters' and local fire regulations govern the installations. A 220-gallon tank is supplied as part of the original equipment, this and the plant costing $550. Where a 550 or 1000-gallon tank is requested additional charges of $100 and $200, respectively, are made, the 220-gallon tank may be placed in the cellar but the larger tanks are required to be put underground outside the building. Two-inch line is run from the cellar tank to the outside and in cases where the property has no place where a tank truck may drive in, a 2-inch line is run to the front or rear alley.

Burners may be installed in any furnace or boiler by removing the grates and lining the fire bowl with brick. However, wider fire bowls are needed in the opinion of Mr. Donoher who predicts that broader furnaces with flatter domes eventually will be made. This, he points out, would permit more perfect combustion. He suggests a furnce built almost entirely of brick.

The Williams uses gas and electricity as well as oil. The maximum cost of the former in severe weather is not more than $3 a month, Mr. Donoher said. In milder weather when the plant is shut down a great deal automatically through thermostatic control, the operating cost is less. He places the oil consumption at approximately 100 gallons per season per room but says this amount would be exceeded in a severe season. A great deal, of course, depends upon the temperature which the occupants of a house wish to maintain. A home heated to 72 degres will consume considerably more fuel oil than one heated to only 66 degrees which fresh air enthusiasts recommend.

Flat Prices Over Winter

Several oil companies are taking advantage of the furnace oil opportunity thus being afforded in Toledo and two have made flat prices for delivery of oil until June 1, next year. Prices vary according to the grade of oil. One company is offering a 27 gravity fuel at 5½ cents a gallon delivered by tank wagon. From this figure prices range up to 8½ cents a gallon for a light gas oil. The company recommends a 30-

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Henry L. Doherty has put into effect in Toledo, O., the recommendations that the oil industry support oil burner manufacturers in order to extend the market for the heavier petroleum products.

Through his public utility company in Toledo, he has fifty salesmen on the street pushing heating plants along with other appliances designed to consume oil, gas or electricity, or all three.

The effort is meeting with seeming success but what is needed most, in the opinion of a Toledo refiner, is a burner of the "flivver" class—one that will put oil burning within the reach of the great common masses. Inventors and manufacturers should be assisted by the oil industry, Mr. Doherty suggests, and his company is putting the suggestions into action.
—Editor

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32 Be. gravity oil as being most successful but says that any oil that will flow through a one-inch pipe in winter, will do. This permits of a rather viscous oil as the feed pipe either is buried beneath the frost line or is protected within the cellar.

The burner does not require a kerosene distillate which has fewer heat units per gallon. This fact is a talking point whenever the company has a technical prospect but cleanliness, convenience and assurance against fluctuting coal supply because of mine strikes and low gas pressure are the main ideas set before the layman. Toledo, however, is advantageously situated for an oil supply. It lies close to the old northwestern Ohio oilfields with more than 6000 barrels production daily; it is on a branch of the Buckeye Pipe Line, and has five refineries producing fuel oil. This latter fact has, by no means, been overlooked in pressing sales.

The efforts of the district salesmen and the general salesman are supplemented by advertisements in a daily newspaper which include letters from satisfied users. This testimonial copy is used three times a week, about a quarter page being used each time. These have paved the way in many cases for the salesmen and in some instances prospects have not waited for the salesman to call but have hurried down to the Edison company or the Williams agent—both names appear in the advertising—to get the particulars about the plant.

The operations of the Toledo Edison Co. are in accord with the program for the oil industry to "support, encourage and assist inventors and manufacturers of oil burning apparatus" as recommended before the recent Atlantic City convention of the National Petroleum Association by Henry L. Doherty whose Cities Service Co. owns controlling interest in Toledo Edison.

L. R. Crawford, president of Paragon Refining Co., Toledo, believes with Mr. Doherty that the oil industry should become more active in providing markets for the heavier petroleum products. He agitated for this at the last meeting of the American Petroleum Institute and believes that organization should support research workers in the development of a lower priced oil burner.

Experiments with several kinds of burners have ben made at the Paragon plant. The higher priced mechanically fed and forced draft burners have been found successful, Mr. Crawford said, although some might be made more fool-proof. What is needed to extend the use of fuel oil in homes is a burner of the "flivver" class, Mr. Crawford pointed out; there are plenty of good burners already in the "eight-cylinder" class.

An old Paragon employe developed a gravity feed burner that worked well in experiments but after some time it developed the ailments that seem common to most gravity feeds. The burner carbonized, smoked and made necessary the redecorating of a house where it had been installed. Gravity feeds, Mr. Crawford pointed out, are too sensitive to changes in atmospheric conditions. Neither have engineers been able to develop the automatic feature so well as in the electrically driven plants.

Believes Pollution By Oil Can Be Prevented

WASHINGTON, Oct. 4.—Preliminary report of the special committee which has been investigating pollution of rivers and harbors through waste oil from oil-burning ships, tankers, refineries, industrial plants, sewers, and such, has been made and the Bureau of Mines believes much of the present damage can be prevented by installation of devices on ships to prevent egress of oil waste and provision of barges and other receptacles in harbor for receipt of necessary waste.

The investigation was made in response to legislation by the last Congress and the preliminary report was signed by F. W. Lane, Bureau of Mines, as chairman; A. D. Bauer, oil expert, Bureau of Mines; H. F. Fisher, American Petroleum Institute, and P. N. Harding, American Steamship Owners Association.

Pollution was found at the 35 points selected for study, the report says, but was worst in the Schuylkill river, near Philadelphia, Pensacola, Fla., in the Houston ship canal, and at Port Arthur, Texas.

"Apparently the worst conditions prevailed during the latter part of the war and the period immediately following," the report continued, "and attained maximum seriousness in 1920 or 1921. Since this time in nearly all localities visited by the committee, officials and other persons duly informed indicated that an improvement has taken place. As would be expected, conditions in general have been most serious in those localities where industrial activity has been greatest.

"Port Arthur, Texas, probably is the worst oil-polluted locality visited by the committee but even here present conditions are said to be somewhat better than those which formerly existed.

"In general, pollution by oil at beaches along the Atlantic and Gulf coasts has presented a very serious problem during the past few years, although present conditions represent a great improvement over those that prevailed two years ago. Some comprehensive programme, involving definite measures, undoubtedly is necessary to reasonably insure that the beaches shall be in proper condition for the public use.

"The possible effects of oil pollution on the public health cannot be ignored. The loss of the use of bathing beaches as a result of oil contamination must be regarded a more or less serious factor, depending upon the extent to which the public is deprived of this means of recreation. The same may be said regarding boating, fishing and hunting. Oily refuse may render the appearance of a locality unsightly and thus tend to lower the hygienic standards of the community. The effect upon the edibility of sea food, and the possibility of oil retarding the normal oxidation of sewage must be carefully considered. Attention is called to the possible effect of oil in causing skin diseases, and the nuisance created by the odors directly and indirectly attributable to oil pollution.

"It appears impracticable to state the degree to which these factors are at present affecting the public health; but it seems certain that the effect must be appreciable over a long period of time.

"So far as oil burning ships are concerned, it is believed that the most satisfactory ultimate solution of the problem will involve the installation of an oil-water separating device on each individual ship, and providing facilities in harbors for the collection and proper disposal of heavy sludges and certain other oil wastes which the separators will not handle.

"Of the devices proposed and now under development for elminating oil burning ships as a source of pollution, none have been seen which to date can be unreservedly recommended for installation on board general cargo vessels. One or two of these devices are promising, but more experimental work is necessary. Attention has already been called to a promising oil-water separator for installation on tankers; and the need for immediate steps to develop devices and means for general application to general cargo vessels was pointed out.

"It seems probable that, in addition to any oil-water separating device, however effective, which may be installed on vessels, methods for collecting and properly disposing of tank sludge and certain other oil refuse will have to be generally available in port if oil pollution from vessels is to be avoided.

"In the absence of separating apparatus aboard ship, the use of barges for collecting oil-contaminated water and oily refuse, in connection with adequate facilities for the proper treatment and disposal of such wastes would seem to offer the most immediately available means for coping with the situation after the vessel has arrived in port. It would be advisable to have apparatus for skimming and collecting from the surface of the water patches of free oil, which sometimes result from accidents in spite of all precautions."

W. H. Zahniser Dies

PITTSBURGH, Oct. 5.—Funeral services were held Wednesday at Mercer for William H. Zahniser, treasurer of the Gibson-Zahniser Oil Corp. of Tulsa, which has acreage in Oklahoma and Kansas. He died last week in New York where he had made his home since quitting the brokerage business in Pittsburgh 10 years ago. Mr. Zahniser was also vice-president and a director of the Atlantic Gulf Oil Corp., subsidiary of the Atlantic, Gulf & West Indies Steamship Lines, and was president of the Tepetate Oil Co. He was 55 years old and a bachelor.

SAN FRANCISCO, Oct. 5.—Alexander Duessen, consulting geologist of Houston, accompanied by Mrs. Duessen, has returned home from the Pacific coast via Denver and Fort Worth. They were accompanied into the Yosemite by Mr. and Mrs. Wallace E. Pratt, the former chief geologist of the Humble Oil & Refining Co., who left San Francisco two days earlier.

SAN FRANCISCO, Oct. 4.—Earl G. Gaylord, chief geologist of the Pacific Oil Co., is at his desk in San Francisco after a trip through the San Joaquin Valley fields that followed the Association meeting in Los Angeles.

Jobbers Are In Minority At Chicago Convention Of A. O. M. A.

Staff Special
CHICAGO, Oct. 4

THE diversity in convention entertainment offered the oil industry during this month was a factor in holding down attendance at the sessions of the American Oil Men's Association at the Congress Hotel, Oct. 2 to 4. Total registrations were under 400, and the greater part of these were supply and equipment manufacturers' representatives and Chicago oil men.

There were but two business sessions, these following luncheons on the first and second days, and discussions were general in nature. Morning sessions were scheduled on the second and third days; but it was found impossible to get a sufficient number of jobbers together at one time to start a forum and they were passed up altogether.

The two principal speakers were E. W. Marland, and W. H. Gray, president of the National Independent Producers' Association. Mr. Marland, who heads the Marland Refining Co. interests, was introduced as speaking from the Mid-Continent refiners' viewpoint. He confined his remarks, however, to the situation now confronting the Independent producing business, also the theme of Mr. Gray's address.

One of the most significant statements in Mr. Marland's talk was that, while seven years ago 85 per cent of crude production in this country was "free" oil, that produced by Independent producers, now but 25 per cent of domestic production, is outside the hands of the Standard and what might be called major operating interests. The value of the current year's production will not pay for the drilling of new wells this year, he also said.

Mr. Gray stated his belief that by March of next year current consumption will require drawing oil from storage. He estimated that, of 285,000 producing wells, 25,000 are operating at a loss at today's crude prices.

Both speakers urged the marketing industry, coming in contact with the public, to give it the actual facts relative to production costs to offset the propaganda traceable to political sources and motives.

As is true of every convention, new and improved marketing equipment featured the supply exhibit. The predominating feature was equipment designed for the faster and more efficient handling of gasoline. While actual orders taken at this convention did not come up to last spring's business with most exhibitors, several said there was enough busines to show the Independent marketing industry was far from through purchasing equipment.

One exhibitor reported a single order for $30,000 worth of his goods, the largest taken in at the convention as far as is known.

Entertainment features at the convention were a smoker the second night and the banquet the last night.

Special committees appointed at the convention to represent the association in certain phases of its activities during the year were (1) a committee of three on oil burners and (2) a committee of three on steel barrels. At a meeting of the directors it was decided to give Secretary Walter A. Willard the title of field secretary. The natural supposition is that an opening is being made for the employment of an executive secretary, although announcement has not been made to that effect.

G. I. Sweney of Peoria, Ill., P. C. Crenshaw of Chicago and C. A. Gustafson of Chicago constitute the oil burner committee. It is the purpose of this committee to promote the more extensive use of heavier refinery products through the conventional channels of trade in the oil business, cooperating with the National Association of Oil Burner Manufacturers, which came into existence in Chicago on Sept. 7.

The committee on steel barrels is instructed to work with the specifications and standards committee of the Steel Barrel Manufacturers Association in bringing about a reduction in the number of types of steel packages used in the oil business.

The most brilliant social event of the convention was the annual banquet Thursday night, at which Sheldon Clark, vice president of the Sinclair Refining Co., was toastmaster. The speakers of the evening were James A. Watson, United States senator from Indiana, Henry R. Rathbone, a prominent Chicago attorney and Leigh R. Putnam, an advertising man with Ferry-Hanly Co., of Chicago. Mr. Putnam spoke first, on Moulding Public Opinion.

His address was punctuated with humorous stories and apt comparisons, but it was not so lightsome as to fail in purpose. Plainly Mr. Putnam indicted the oil men for making no effort to mould public opinion, saying their remarkable success was due rather to the efforts of the automotve industry than their own. Briefly afterwards he outlined his own ideas of a common insignia for all Independent oil jobbers, a unified national advertising campaign, and a standardization of their products.

"What is the matter with the United States" was the cry in Senator Watson's address, which he answered himself, "Nothing but too much complaining, about nonexistent troubles, too much false and unjustified propaganda, and too many unreasonable requests upon the state and nation." He stated that government operations of railroads and other private interests would mean politicalizing the laboring classes, and proclaimed his conviction that the government should try to run no enterprise which could be run successfully as a private business.

Following Senator Watson, Mr. Rathbone made a ringing patriotic address.

Would Center On 3 Steel Barrel Types

By Ward K. Halbert
STAFF REPRESENTATIVE

CHICAGO, Oct.3.—Proposal to reduce the number of types of steel barrels now commonly used in the oil trade from 16 to 3 was made by J. M. Finney, president of the Cleveland Steel Barrel Co. to the American Oil Men's Association at the luncheon the second day. Mr. Finney is chairman of the Specifications and Standards Committee of the Steel Barrel Manufacturers Association.

Standardization work has been going on in the steel package business for something like eight years, Mr. Finney says, and already has accomplished a great deal. The two per cent oversize for outage was the first uniformly adopted rule. Early in the history of the industry, barrel manufacturers were accustomed to make 50-gallon barrels to contain exactly 50 gallons which proved inconvenient to the oil trade. Jobbers were unable to realize on 50-gallon shipments after shrinkage and evaporation allowances were made. In view of this, the manufacturers got together and agreed upon a 2 per cent oversize for barrels of all capacities.

The 17 Sizes Used

Under the specific classification of "barrels" there are five types, with capacities ranging between 50 and 65 gallons. The barrel of 42 gallons, in which oil production is computed, is not actually made as a standard container. Steel barrels in common use are 50 gallon, 55 gallon, 58 gallon, 60 gallon, and 65 gallon. But there are steel packages in common use which are known as "half-barrels" and they range in capacity between 30 and 40 gallons, also five in number. They are 30 gallon, 33 gallon, 35 gallon, 38 gallon, and 40 gallon.

The foregoing are the 10 most common types of oil containers but there are six sizes smaller than half-barrels.

These drums, sometimes still called kegs, commonly are carried in dealers' stocks in sizes of 10 gallon, 13 gallon, 15 gallon, 18 gallon, 20 gallon and 25 gallon. From the oil man's viewpoint this covers the list but the barrel industry knows many more, not used in the oil trade. Larger than 65-gallon barrels there are almost as many more casks used in chemical trades. Work is in progress to reduce their number too, Mr. Finney says.

The proposition now is to reduce the drums used in the oiltrade to one 55-gallon barrels, one 30-gallon half-barrel, and one 15-gallon keg. These three will serve the needs of the trade annual savings and eliminate untold confusion in records. Now the word "barrel" is about as confusing a term as it is possible to use. Probably there are more barrels made in the 55-gallon size, both wood and steel, than any other capacity, yet statistics on refined products are made in gallons for accuracy's sake and publishers often translate the figures to the public in terfs of 50-gallon barrels.

Something Accomplished

Mr. Finney believes something was done at this meeting which may greatly benefit the barrel indutry and the oil industry as well. The association voted to refer Mr. Finney's proposition to the executive committee with instructions to appoint a special committee of oil men to deal directly with the committee from the Steel Barrel Manufacturers' Association, which is recognized by the United States department of commerce and with which the department is working toward standardization.

Starting at the beginning, where the first operation in the manufacture of a steel barrel is performed on the metal, the rolling mills are making too many sizes of sheets for economic operation. Fabricators have expressed to Mr. Finney their approval of the three sizes he mentioned to the A. O. M. A. They maintain that such a standardization would enable them to turn out their products more cheaply. With the barrel manufacturer, who converts sheet metal into the actual container, the chief advantage will be in the elimination of carrying costs.

Cut Stock 20 Per Cent

It is estimated that the average steel barrel manufacturer carries 20 per cent more stock on hand than would be necessary if there were but three sizes of oil barrels. In this case he could release 20 cents on every dollar's worth of goods in the warehouse to be used some other way, not to mention the fact that his sheet metal would cost less and he could therefore sell the finished product for correspondingly less.

The possibilities of benefits growing out of standardization multiply when the jobber's position in the matter is considered. His billings and other paper work would be materially simplified. Types of barrel storage equipment and warehouse spaces would automatically standardize themselves. Car loading would be simplified greatly, and Mr. Finney points out the three proposed types are best suited to convenient packing in box cars.

Not only do close fitting, evenly balanced car loads reduce the possible damage to barrels in transit but they eliminate waste space in cars. Already there are only small differences in lengths and diameters of steel barrels of the same capacity, and if the three capacities were standardized it would be an easy matter to bring dimensions to a standard. Also the locations and sizes of openings could gradually be adjusted to uniformity. One oil compounder at the meeting stated to Mr. Finney that he carried eight types of barrels in his warehouse which, if reduced to three, would make it possible for him to do just as much business on half his present stock.

All Are Favorable

Mr. Finney is of the opinion that all manufacturers of steel packages, whether in the association or not, will welcome the chance to reduce the number of types of barrels. Such a move, he says, will not reduce the business of any manufacturer or any oil man, but enabling them to do the same business on smaller stocks, will also enable them to expand their present business without building more storage room or buying more barrels.

It will not be necessary to junk any of the present equipment. The change can be brought about gradually by buying only barrels of standard types and junking the odd sizes as they wear out. In this way standardization will begin with the manufacturers of the sheet metal, where it should begin, and eventually work through the entire system to the consuming trade.

Modern Sales Tactics Applied To Oil Products

CHICAGO, Oct. 2.—Under the general topic of "Sales Tactics in Modern Buiness," Benjamin H. Bills, director of sales for the American Bond & Mortgage Co., Chicago, dished up the first course in the menu offered at the convention of the American Oil Men's Association by giving his ideas on intensive salesmanship.

His talk for the most part was rapid fire enough to be described as epigrammatic and the audience of oilmen was entertained as well as instructed.

This was after a more material luncheon had been served in the Gold Room of the Congress, and after his honor, William Dever, mayor of Chicago, had followed the accepted tradition of offering the keys of the city to the visiting oil men.

In the absence through illness of H. M. McKenzie, president of the association, E. E. Smith, of the Smith Oil & Refining Co., Rockford, Ill., presided. Mr. Smith was president of the association for a short time after its organization, resigning because of too heavy duties elsewhere.

Those who setled back in their chairs to take it easy when Mr. Bills began to speak straightened up when he shot a few fast ones over the plate, as "Canned sales talks give ptomaine poisoning," and "If your competitor can take your sales talk and put his name at the bottom of it it's a mighty poor sales talk."

Following what is generally accepted as one of the cardinal principles of salesmanship Mr. Bills secured the attention of his 200 or so prospects and held it throughout.

"The true salesman," he went on to say, "is selling not a product but a function. The real estate man is selling not a lot, but a home site. The piano salesman sells not a musical instrument, but evenings of enjoyment for the family. The oil salesman should be selling, not material gasoline and lubricating oils, but smooth transportation and efficient lubrication."

The proper way to have the salesman attack his particular problem in salesmanship is to make him itemize or analyze his product for the things that are distinctive or individual to it in its quality, the way it is put up, the things that mark the house back of it and so on. Until he can do that he is just selling one of several similar products on the market, he pointed out.

"Hypothecate and then measure up to it," was another dose of information he passed out in pill form. Fearing mental indigestion on the part of some in the audience, he went on to explain this meant nothing more than building up in the prospective customer's mind by the salesman a picture of the ideal product, meeting all desired requirements; and then showing his own products met these requirements.

"In a lubricating oil, for example, the qualities that most enter into the service of the oil should be set forth, such as a suitable crude for the base, best methods of refining or manufacture, uniformity of product over a long period, the experience and standing of the house back of it, service in distribution, a trained staff of chemists inspecting all shipments, the specifications upon which it is manufactured to meet certain industrial needs and so on.

"In other words make yourself a counsellor to your customer's needs first. Then, having set a standard with which he can agree, show him how closely your particular product covers these hypothetical requirements."

Various methods of closing the sale were gone into by Mr. Bills. One was to make an assumption of agreement on the fundamentals of assent. Putting it more leisurely, this meant, to a layman who hasn't sold anything since an unfortunante experience with Dr. So and So's Compendium of Home Remedies in college days, taking it for granted that the order is to be taken and getting the customer to agree on the terms of sale, methods of delivery and so on. Having gotten him into the state of mind where he will agree with the details the actual signing of the order is the logical step.

Another method was that of finding the prospect's principal single objection and then centering the argument to overcome that, taking it for granted in the meantime that, if this dissent is overcome, the prospect is in accord on all other points in connection with the sale.

Mr. Smith doubled on the program at the opening meeting, and, as presiding officer, had to introduce himself as one of the speakers. His talk was short and along the lines of the need for a strongly organized industry to carry the industry's story successfully to the public.

Modern Rip Van Winkle At Exhibit

Oil Marketer Of 25 Years Ago Finds Much To Marvel At In Our Oil Marketing Equipment

By V. B. Guthrie
STAFF REPRESENTATIVE

CHICAGO, Oct. 3

DROP back in fancy 25 years, less than a generation, and visit Tom Smith, oil company agent at Cincinati, say.

The growing kerosene trade was the talk of the business then. Tom Smith handled most of his trade in barrels, just the same wood barrels that other businesses used.

Well he knew they were heavy, for he had to lift them himself, or at least skid them, from car to warehouse, to wagon and to his customers, the grocery and hardware stores and well-to-do homes.

Then some Yankee inventor astounded Tom Smith and his like by selling a 60-gallon pump can, which measured in quarts to one gallon. And Smith took to a tank wagon and spent all day bucketing 500 to 600 gallons to fill his customers' cans.

The gasoline trade really was a bother and he wished it might have been done away with. It meant more heavy wood barrels to be lifted around, for this product could not be handled in the pump cans because of evaporation. But some people would insist on having it for gas engines, or lighting systems, of a new-fangled contraption called an automobile that rich people were playing with.

Smith sold lubricating oils too, cylinder, engine, loom and spindle oils principally; but these he had to handle in barrels, or at least in his five-gallon buckets. His storage tanks were all above ground and he drew from them by gravity. But he did listen seriously when one of his friends suggested that some day tanks might be buried underground and their contents pumped from them faster than could be done by gravity.

Now do a Rip Van Winkle with Tom Smith for 25 years and, through a bit of magic, set him down at the A. O. M. A. Supply Exhibits in the Elizabethan Room at the Congress Hotel today, and watch him as, pop-eyed, he views the manifold evidence of what has happened in the development of oil marketing equipment in that interim.

Helpful Giants

From all sides giants of gasoline pumps standing 10 feet tall and better, in coats of brilliant colors, lower at him from strangely lighted faces for his aspersions on the gasoline business of 25 years ago. Marvel of marvels, he finds a Wayne pump that will not only spout gasoline through a hose at the rate of 10 gallons in 17 seconds, but under the same bright red cloak, can supply two grades of lubricating oils in quantities up to a gallon.

He sees a National Recording pump that not only serves gasoline if he but touches a button or adjusts a lever, but in an unbelieveably short time will write the history of the transaction and pass it out to him, the amount sold, the price, and even the number of the automobile that it filled.

Then a message printed on the outside of a pump attracts him and he finds that is the millionth pump, and that only one company, S. F. Bowser & Co. has made. He sees a Clear Vision pump with a shut off at the nozzle that clips the flow of gasoline from the hose at his instant command, and a Hayes Equipment pump with a device he can scarcely comprehend that of itself counts in gallons and fractions as the liquid flows through it. He finds a Rapid Dayton pump, a creature only of metal, that guards with a special control valve on its air lift feature against his, a human being's carelessness.

Another Force At Work

Tom Smith finds answered here conclusively in actual display the question of his day as to whether oil can be economically pumped from underground tanks. The Blackmer Rotary Pump Co. show him pumps that will do this, some of them small enough, it looks, to be put under his arm and walked off with. Morrison Brothers exhibit for him their new two-inch rotary pump that will pump 100 gallons of gasoline to the minute.

Special hose, he learns, has been devised to meet the special needs of handling gasoline. Metal Hose & Tubing Co. show him a host of sizes and tell him how long some have been in use. There is a variety in manufacture even in this one relatively small item, he finds, as he looks over similar displays by United Metal Hose Co.

Some minds, he further learns, have been devoted to bringing out new appliances to go with the hose. The Mars Co. has a ball and socket swivel joint designed to prevent the hose from wearing where it is fastened onto the pump. Chicago Tubing & Braiding Co. has a flexible metal nozzle which the pump operator may manipulate to suit his needs.

Who Has Aladdin's Lamp?

As he studies the myriad parts that Gilbert & Barker show him go to make up one of these dispensing devices, and sees pumps of various sizes at Milwaukee Tank Works and Guarantee Liquid Measure and Visible Pump Co. displays he marvels that these and other companies that manufacture them must have had access to Aladdin's lamp to thus call on electricity and air to do so much of the work that he must so laboriously perform with his own muscles but a few years ago.

But held though Tom Smith, oil marketer of 25 years ago, is by these fascinating giants that stand ready to serve him today, blinking eyes and dancing letters in other parts of the room overcome his curiosity.

Whereas, then, he used to hasten to close his working day when twilight came, to avoid the uncertain and dangerous light of a kerosene lantern or lamp, Smith finds now the day of selling gasoline and oil continues into the night, and darkness means nothing.

Darkness Is Routed

Globes atop pumps and signs on standards and buildings that appear but ordinary by day suddenly snap into life at night to beckon trade to the pumps that stand ready to serve millions of motor cars.

Cheaply too, for he finds at the McSavaney Co. exhibit a novelty in a three-way sign standing five feet in height that can be electrically illuminated at a cost of from 9 to 14 cents a night, and tells the passing world the name of the oil company and the brand of gasoline it sells.

At the Dawes Electric Sign & Manufacturing Co. booth he sees a host of gobes of various sizes, shapes and colors for display purposes on top of pumps, pillars and so on, the latest shape being a square four-sided design, and he learns that this one company alone has turned out designs for 2018 different companies. He finds the Massillon-Cleveland-Akron Sign Co. making lithographed daylight signs of design and color work that in his time were only possible in expensive printed jobs, if then.

And So On Without End

Not only are there pumps to handle gasoline quickly and with least effort on his part. Marketer Tom Smith finds, but aso for all grades of lubricating oils heavy and light and even for grease. Marvel Equipment Co. and Bennett Injector Co. show him various sizes, and visible types and mounted on wheels, all to lighten his work.

Of small items of equipment, all new to his time, there is great enough number to weary him in merely enumerating it, and new ones being brought out continually. A neat green box set on a foundation with a small pillar and a light gob atop, for instance, the Curtis Pneumatic Machinery Co. show him, will house a hose from which his customers can draw water and also another hose which crawls back in the box of its own accord when released from duty, and he may even regulate that rate at which it will draw back. The Midland Specialties Co. have a mileage testing tank, holding a perfect gallon,

which may be put in the auto tank for testing mileage qualities of various gasolines, to say nothing of funnels, cans, oiler stands and so, new but a few years ago, to say nothing of Tom Smith's time.

The Jiffy Oiler Manufacturing Co. has a brand new valve in the head device for use with motor oils handled in bottles whereby the oil cannot be poured from the bottle until the nozzle is in the receiving aperture.

"And what may be the occasion of this great display?" Marketer Tom Smith finally finds his senses to ask.

"A meeting of independent oil men," a bystander told him.

"But not independent of men who can produce helpful devices such as these I hope," opined our friend.

"That would not have been good business, even 25 years ago."

New Aid In Selling

And Smith realizes that a new force, advertising, has come into full being since he left off marketing oil, and that special equipment has been devised to let oil companies take full advantage of this aid in selling, under the conditions peculiar to their business.

But other displays rivaling in color a patchwork quilt of his time catch his eye. Used to surprises by now, he learns with equilibrium that selling lubrication oils in barrels and five-gallon buckets is only a share of present day business.

Shelf upon shelf of cans of all shapes, sizes and colors at the booths of the St. Louis Tin & Sheet Metal Working Co. and the American Can Co. do not need to be explained to tell him he can now not only buy neat containers to handles his oils in smaller quantities, but that they will be colored and printed for him with any design of his own choosing.

Air Is Harnessed

A noise like a small explosion alarms our marketer of 25 years ago and investigation of that brings something new for him to marvel at again. The very air itself has been trapped and made to serve his customers by filling in an instant an automobile tire, huge in comparison with the bicycle tire he was used to pumping up by hand.

A device that will do that is not much more than three feet long and high, and half that width. The Curtis Pneumatic Machinery Co., Globe Manufacturing Co., U. S. Air Compressor Co. and Utica Compressor Co. show him how that can be done practically noiselessly, and automatically, by electricity or a gasoline engine.

Heat is produced in this operation of compressing the air, he finds, and the Wall Pump & Compressor Co. shows him a new hardly noticeable aluminum device for doing away with this heat and another device for removing what moisture in the air may be reduced to water in the operation.

Progress In Tanks

By now Tom Smith is not the least bit surprised to find that the storage tanks of his time are no more and that the tanks of the new generation of oil marketers are prefected to take care of vapors arising from the oil within practically without loss and that the chances of fire to the contents from these vapors have been reduced to a neglible factor.

Such concerns as the Graver Corp. and Petroleum Iron Works, and Leader Iron Works he finds, will send engineers to study his particular need for tanks and instal them under their own supervision.

In such a mad scrambling business as marketing oil today, compared with his experience of 25 years ago, Tom Smith concludes his tank wagon, a novelty of his day, has passed into the discard. The Columbian Steel Tank Co. shows him what strides this transportation equipment has taken, not only in the motive power itself, but in methods of handling the load quickly and providing counter dials that help the driver keep track accurately of the distribution of the contents.

Poor Gasoline Breaking California Market

Staff Special

CHICAGO, Oct. 4.—Marketing conditions in California are worse than those in distributing territories east of the Rocky Mountains, according to C. W. Ralph, director of sales and transportation for the Union Oil Co. of California, who was in Chicago this week. Mr. Ralph was in the city only three days, coming all the way from Los Angeles to attend the convention of the American Oil Men's Association.

Mr. Ralph expresses the hope that the government will take action to curb the operations of stock promotion companies in future flush pools in California and elsewhere, holding them responsible for bringing the excess volume of crude oil to the surface when it was least needed, wasting natural resources, breaking the market when consumption might have made it healthy and strong, and making the gullible public pay the cost.

There are 49 Independent topping plants in the Los Angeles basin now, according to Mr. Ralph. Some of them are 10 years old but many are less than a year old. They have to sell their gasoline in the limited territory which they can reach by tank wagon, and the result is that service station prices in that neighborhood range as low as 6 cents a gallon. Most of the stuff retailed at 6 cents is of inferior quality however, some of it having an end point of 500.

In the city of Los Angeles there is a law requiring the sale of gasoline of navy specifications or better. This keeps the quality up and also helps to maintain the tank wagon price there, but outside of the city limits there is no quality specification and consequently no limit to the depth to which the price may fall. Until Sept 30 there was a 10-cent tank wagon in Los Angeles and a 13-cent service station price. On Oct. 1 however a 2-cent road tax went into effect in the state which put the tank wagon price up to 12 cents and the service station to 15. Standard Oil Co. of California maintains a 3-cent differential in its territory.

A grand jury investigation of the oil stock promoters is in progress. The jury was in session in Los Angeles last week, and Mr, Ralph states several indictments will probably be returned. Promoters in California have not used the mails to the extent the Texas promoters did, and therefore are harder to convict of law violation. They practiced stretching tents near their drilling rigs, bringing bus loads of sightseers to their wells and once they had them on the grond would put the high pressure salesmanship to them and exchange stock for sightseer's good money.

Marland Urges Support Of Crude Market

Staff Special

CHICAGO, Oct. 3.—Existing low prices of crude oil are just as certainly damaging the Independent oil jobber as they are the producers themselves, although in an indirect way, is the substance of the talk delivered at lunch the second day by E. W. Marland to American Oil Men's Association. "Independent oil dealers and refiners may expect to continue to prosper just as long as the Independent producer continues to be a factor in the business, and no longer," he said.

Independent jobbers must supply their needs from Independent refiners, who in turn must depend upon Independent producers for their supply of crude. When the supply fails, the whole structure is broken down. In this connection, Mr. Marlad pointed out that the supply was diminishing gradually.

"Seven years ago 85 per cent of all oil was produced by the smaller Independents and now that has been reduced to about 25 per cent. The remaining 75 per cent is produced by major interests, operating in all branches of the industry and supported by public capital.

Operating in The Red

"More money was spent last year in drilling for oil than was realized by the oil producing industry in its sale," Mr. Marland declared, but emphasized that he did not mean that last year's wildcats did not pay for themselves. In other words more money was spent drilling new wells than was received for the sale of crude oil from all wells, both new and old.

He said Standard oil had been the most constructive factor in the industry, and the greatest stabilizing force. "We producers need Standard Oil" he said, and "Standard Oil needs Independent competitive system, in marketing, refining and producing."

Mr. Marland's name was not on the program officially. He sat at the speaker's table during the luncheon with intention to leave Chicago on an early afternoon train. He was prevailed upon to say a few words, and the gathering was called to order between the second and third courses of the meal to hear him. G. I. Sweney, president of the Sweney Gasoline & Oil Co. of Peoria, Ill., presided and had no trouble getting the delegates to wait 10 minutes for their dessert while Mr. Marland talked. His speech was short, not exceeding 10 minutes.

"The Independent refiner can exist only on 'free oil' and the producer of free oil must therefore not be eliminated," Mr. Marland said in closing, "So please do not lend your voice or your vote to the further reduction of crude oil."

New And Familiar Faces Seen At Chicago

EASTERN refiners, naturally enough, were in the very small minority at the Chicago convention, but there was at least one on hand, P. S. Tarbox, who runs the Ohio Valley Refining Co. at St. Marys, W. Va., He spent most of his time answering questions about his new radiator compound, Freeznix. He says his company at least takes its own medicine, for employes there have been using this in their own cars the past two winters.

F. P. Buckle, whose name and face are familiar to oil jobbers over the south and middlewest, was in attendance at the convention. Mr. Buckle has sold oil, representing refiners and large marketers, throughout the territories of Standard Oil companies of Indiana, Louisiana and Kentucky. Now he is in business for himself, serving the smoke stack trade and marketing lubricants in Chicago. His plant and office are at 455 Halstead St.

Andrew Riekse, general manager of the Colonial Oil Co., Grand Rapids, Mich., is of the opinion the service station business should be conducted along the lines the United Cigar Stores run numerous branches; that is by making other income from the location carry the overhead for cigar stand itself. He says he has worked this out at two of his stations by putting garages and stores on his filling station properties and securing an income from these as well as from the service station itself.

Walter W. McKee now says "you all" like a dyed-in-the-wool southerner, since he has established himself in Charleston, W. Va., looking after sales for the Elk Refining Co. He used to be with the Admiral Petroleum Co. in Pittsburgh. He brought word to the convention that Gov. Morgan had asked the state public service commission to investigate the price of gasoline at the behest of the Charleston Auto Club.

Representing a house 65 years old or thereabouts lent dignity to the presence at the convention of W. G. Moncrief, president of the Swan & Finch Co., and H. E. Potts, one of the board of directors. In addition to taking in the convention, these two were supervising the enlargement of their plant in this district, to take care of the more general business in oil products the company has gone into the past few years.

W. W. Dauner, formerly chief chemist of Champlin Refining Co., Enid, Okla., now is connected with Lindsay-McMillan Co., of Milwaukee in the department of manufacturing and jobbing, and represented his firm at the convention.

Studying credit conditions in his own company recently, H. H. Ragle, who runs the Federal Petroleum Co. at Jackson, Mich., found one tank station had only $90 worth of credit on its books, while another had several thousand dollars. Local competitive conditions were largely responsible, he discovered The agent at the latter company believed he had to extend credit because other companies were doing it, while the trade in the other agent's territory was pretty well educated to paying cash. A small degree of cooperative effort generally would cut down the credit business to the benefit of all, he says.

Dr. C. K. Francis, chief chemist for the Producers & Refiners Corp., says it is almost pure luck that officials of his company were not in the recent railroad catastrophe that took place near Casper. A party, including executive heads, on a tour of this district had originally planned to take this particular train, but shortened their trip and left two days previous.

Paul Blazier, sales manager of the Great Southern Refining Co., Lexington, Ky., looked at his desk at six o'clock the evening of the 2nd and, finding it cleared up of work to a greater extent than he regarded as normal, he caught a train a little later and landed in Chicago the next morning. Two days at the convention, if it does nothing more, he says, it will at least give his work a chance to accumulate again.

While he should be properly classified as a supply man, E. B. Piepho, head of the St. Louis Tin & Sheet Metal Working Co., deserves mention among the oil men proper, for he has a convention attendance record that could hardly be equalled. He has missed only one convention since the marketers held what he thinks was their first convention at Louisville several years ago.

S. T. Metcalf, in business for about two years in Buffalo, Ill., under his own name, is one of the few jobbers who has made road oil business the principal part of his sales effort. He has pread an almost unbelieveable number of cars of road oil this season and has largely devised his own equipment to unload tank cars and spread the stuff on the roads.

R. E. Goodwin, with the Paragon Refining Co., Toledo, need we say Ohio, is of the opinion the condition of the refining and marketing business would be improved were the manufacturing and marketing of oil products to be more centralized by localities.

If the long and expensive haul from refining to distant marketing points were cut down he thinks the business could operate with less equipment and less invested capital and also that there would be greater cooperation on the part of the refiner to help the marketer develop his market intensively.

An oil marketers' convention would not seem natural without the presence of George A. Thompson, who looks after tank car sales for the Indian Refining Co. at the New York office. His experience in the oil business goes back 30 years to the time the gasoline trade was the principal bother of every tank station agent.

F. D. Dolder, who started up in business for himself three years ago as the Fox River Oil Co. with headquarters at Somonauk, Ill., estimates that 75 per cent of the farming trade in his territory uses tractors. The farms run in size from 160 to 250 acres and the farmer finds enough work that can be done by the tractor to average eight to 10 weeks a year pretty steady running. He says the farmers are finding out that running a tractor allows them to operate their farms with less manpower than where horses are used.

L. L. Childs of Shreveport, La., president of the Improved Rotary Bit Co., successor to the Stokes Deep Well Tool Co., although he admitted that as an accessory man to the producing branch of the industry there was not much chance for him to make any money at the convention of oil jobbers and refiners, naturally gravitated to the Congress Hotel.

W. B. Cline, known to oil jobbers and refiners in the middle west, through his two terms as secretary of the Minnesota Oil Jobbers' Association, attended the Chicago convention. He is no longer secretary but in the sales department of Roxana Petroleum Corp., and has his headquarters in Federal Reserve Bank building, Kansas City.

Melville C. Hill, with Sweney Gasoline & Oil Co., Peoria, and formerly secretary of the American Oil Men's Association was on hand and helped in carrying out the convention program. But he did find time to show some snapshots of the new baby in his family, albeit he conducted himself modestly for a new father.

Ann Arbor, Mich., was well represented by Fred and Edward Staebler of the Staebler Oil Co. and by John J. Cox, who runs the Michigamua Oil Co. Mr. Cox used to be professor of Highway Engineering in the University of Michigan, but a few years ago bought out the oil business of the old Dean & Co. The Staeblers have recently secured two new service station locations.

One of the newcomers in the jobbing business attending the convention was M. C. Vennett, who six months ago organized the Reliable Oil Co. at Michigan City, Ind. He has two service stations in operation and served his apprenticeship in the oil industry as an employe of the Standard for 12 years.

ROXBURY, MASS., Oct. 10.—Charles H. Snell, employed by the Standard Oil Co. of New York at Milford, has just welcomed twins into his home.

AMARILLO, TEX., Oct. 8.—A. W. Joiner, who has for the past six years conducted a jobbing business, has recently sold out to the American Refining Co. of Wichita Fal's. Mr. Joiner will continue for the present as agent for the company in this territory.

Gray Gives Message To Jobbers To Transmit To Motorist

Staff Special

CHICAGO, Oct. 3

PRODUCERS of oil are not making any money on the present market, but are in the same predicament as the farmer and the cow man today who are unable to sell what they produce for as much as it costs to produce it!

In substance, that is the message brought to the oil men assembled for lunch the second day, by W. H. Gray of Tulsa, president of the National Independent Producers' Association. His topic was "The Producers' Viewpoint," and he described himself as one of the victims of the grave misfortune which has befallen that branch of the oil industry.

"You come in contact with the consuming and buying public, but we do not," said Mr. Gray. "Take this message to your trade. The oil producer can not continue to supply the world with oil at the present prices. There is one alternative always available to producers of anything. They can quit producing when it ceases to be economically possible, as has been illustrated by the producers of cotton, causing the greatest shortage in that commodity since the Civil War. Oil producers also will quit when they can afford to produce no longer.

Compute Cost How?

"Upon what shall the cost of oil operating be computed?" asked Mr. Gray. "Shall it be on the cost of producing a barrel of oil in Mexico where a well must be a gusher to pay? Shall it be the cost of producing a barrel of oil in the flush pools of California? Or shall it be the cost of producing the average barrel of oil from consistent sources? Oil producers know that small pumping wells making a half barrel to three barrels a day go on and on producing, and giving up their little contribution to the world's supply of oil, almost indefinitely.

"There are 5,000 wells making a half barrel a day in the limited area between Chanute, Kan., and Nowata, Okla. There are 285,000 wells in this country and 250,000 of them are losing money. Half of the oil in the country comes from such small wells. Their owners do not want to abandon them but they are expensive to operate. Figures compiled by the Mid-Continent Oil & Gas Association show that in 1920 the average cost of producing a barrel of oil was $1.6724 exclusive of depreciation. These data represent averages from 21 representative companies with varied properties in widely separated fields, producing aggregately 25,860,405 barrels.

"California, Oklahoma, Texas, Wyoming and Mexico are all producing their capacity now," Mr. Gray says, and there is less potential production in North America now than at any time in 10 years. The country is producing about two million barrels a day and consuming approximately 1,700,000 barrels. I venture the prediction that, by the last of February, we will be drawing on storage at the rate of five million barrels a month. Next summer probably you will have an opportunity to tell the consuming public why it is impossible to sell gasoline so cheaply as in the summer of 1923."

Mr. Gray's talk was punctuated with humorous references, in spite of the fact that the message he brought from his branch of the industry to the jobbers was a gloomy one. He pointed out that the government never made any effort to help the oil industry compile its statistics, although it spent hundreds of thousands of dollars on figures for the farmers. That the oil industry has never ceased to function for the government and for the American people, he offered as axiomatic, and clinched it with an item of current interest about the ZR-1.

That greatest lighter-than-air machine, only the afternoon before had given the neck of Chicago a twist, by passing over the city at comparatively low altitude just when the working population was homeward bound. This big bag was full of helium from Electra, Tex., where is produced the only considerable supply of non-inflammable natural gas in the country.

Says Ford Won't Sell Surplus Gasoline

Staff Special

CLEVELAND, Oct. 5.—Reports that Henry Ford was about to engage in the marketing of gasoline and motor oils and which have been current in financial and oil circles for some time, were branded as unfounded in fact by E. G. Liebold, general secretary to the automobile manufacturer. The denial came in a telegram to **National Petroleum News**, which said: "We know nothing relative matter in your telegram."

The query which summarized recent rumors said: "We are informed you have agreed to take surplus gasoline and oil stocks of several Oklahoma refiners to be marketed through Ford agencies over the country. We would appreciate confirmation of this; also amount of gasoline and oil involved and when deliveries are to begin. If Ford agencies do undertake sale of gasoline and motor oil, will they observe tank wagon and service station prices?

Newspaper reports from Detroit later quoted a Ford official as saying: "We have some men in the southwest looking at land. They have not been buying oil or oil land and there is nothing of that kind now on foot. The men have been there on another mission."

The official added, according to the newspaper dispatch, that Mr. Ford had discussed the feasibility of going into the oil business but that such a venture was not seriously considered. The presence of Ford men in Oklahoma, where it was unofficially said they were prospecting for black diamonds, used as cutting and abrasive instruments, and the casual discussion of gasoline marketing, led to the rumors that Ford would soon actively enter the oil business as he had entered the railroad, lumber, iron and steel, coal and other industries.

Three test wells have been drilled on the Ford coal lands in eastern Kentucky by A. J. Dalton of Huntington, W. Va.

Poem By The "Ad" Man

By the shore of Cuticura,
By the sparkling Pluto Water
Lived the Prophylactic Chiclet—
Danderine, fair Buick's daughter.
She was loved by Instant Postum,
Son of Sunkist and Victrola;
Heir apparent to the Mazda
Of the tribe of Coca-Co'a.
Thru the Mar-land strolled the lovers—
Thru the Shredded Wheat they wandered—
"Lovely little Wrigley Chiclet,"
Were the fiery words of Postum,
"No Pyrene can quench the fire,
Nor Aspirin can still the heartache;
Oh, my Prestolite desire,
Let us marry, little Dier-Kiss."
—*From "The Marland Service Man"*

Freight Cost Table

CHICAGO, Oct. 4.—F. E. Spencer, of the Spencer Petroleum Co. was showing around the convention a table of freight costs in cents per gallon and also per barrel of 42 gallons, at both estimated weight of 6.6 pounds and 7.4 pounds per gallon, based on freight rates in cents per hundred weight running from $.005 to $1 per cwt.

The table is gotten out on a sheet about magazine page size and carries on the opposite side a conversion table for price per barrel into price per gallon in which price changes of a half cent per barrel are included, of special interest in fuel oil deals.

Mr. Spencer will send copies of the table to those interested enough to write him.

CHICAGO, Oct. 3.—Charles Whitehair, Cleveland, O., member of the insurance firm of Whitehair Bros., addressed the American Oil Men's Association at the noon luncheon Wednesday. He has talked to the oil men before on more general topics. On this occasion he talked about insurance policy to protect them against damage from wrong delivery. For illustration, the policy he mentioned protects the insured against damage should gasoline be delivered in the place of kerosene.

CHICAGO, Oct. 3.—J. R. Howard, representing the National Transportation Institute, headed by Edgar E. Clark formerly with the Interstate Commerce Commission, addressed the American Oil Men's Association at the Wednesday luncheon. Mr. Howard says he is an Iowa farmer by vocation but is in the transportation service by public call.

CHICAGO, Oct. 3.—I. V. Dippel, formerly agent for the Sinclair Refining Co., at Indianapolis, has been transferred to the Chicago office as assistant division manager, effective Oct. 1. He was succeeded as agent at Indianapolis by W. H. Fiske from the Chicago division office.

Practical Accounting For Service And Bulk Stations

A Discussion Of Forms And Reports, Checking Inventory And So On Peculiar To The Oil Marketing Business

Article I.

(Introductory)

A FEW years ago the problem of detailed and efficient accounting in any line of business was looked upon as an unnecessary overhead expense, in many cases, even to the man owning or operating the business. No wonder it appeared, and even now appears, to be useless and burdensome detail in too many instances to the employer, who fails to realize that it is this very detail he is called on to go through that is a check for his own protection against carelessness or dishonesty on the part of some one else, and also enables him to prove to his company his own ability for advancement. Many businesses that failed would have been highly successful and weathered the storms of financial stress if the owner, or manager, or whoever was in control had realized the importance of systematic and accurate accounting.

First the question arises as to what is accounting. In a sense accounting is closely related to bookkeeping, with which term everyone is more or less familiar, but there is a big difference between the two terms. For illustration we can say that bookkeeping is the act of keeping the company's books and records, while accounting is the principle involved. We may keep books and records as carefully as possible, but unless some definite principles are followed with a certain end in view, we may question whether we have accounted not only for our money, but for every piece of stock, equipment and item of expense involved in the business.

A simple illustration may show this difference. The writer knows there are still many business men who have not been converted to the necessity of accurate accounting. How do they know how much they make? The answer is they do not know, they merely guess. For example, at the beginning of the year a business man had $1000 in the bank and $2000 in merchandise stock, all paid for. He transacted business throughout the year, buying and selling and paying his expenses without any record outside his bank book. At the end of the year, his bank balance was $2300 and his merchandise stock $1.600, all paid for. What did he make? With the few figures we have we obtain $900 profit, outside of all expense, both business and personal. The bank account increased $1300 and the stock value reduced $400, leaving a net gain of $900.

How Not to do It

Take another instance where the proprietor has $1000 in the bank and $2000 in merchandise stock, of which there is $400 worth not yet paid for. He transacted business throughout the year, buying, selling and paying his expenses without any record except his bank book. At the end of the year his bank balance was $1700 and his merchandise stock amounted to $3600, of which $3000 worth was not paid for. His bank balance had increased $700 of course and it looks as though he were considerably better off than at the first of the year. But let's consider his inventory. At the start of the year the net value of his stock was $1600. At the end of the year it amounted to only $600. While his bank balance had increased for the year by $700, the value of his stock reduced $1000. The result was a loss of $300 for the year in his net worth.

No doubt this particular owner felt very prosperous with $1700 in the bank, $700 more than he had at the start of the year, and apparently $3600 worth of stock on his shelves. The fact really is that he lost $300 in his operations for the year and would be broke if his creditors pushed him.

These are simple examples of bookkeeping which caused failure in the latter case through failure to keep track of important items entering into the transaction of business. But this is not accounting. In both examples they have not accounted for a thing—it just happened. The bank balance of course is correct, for the bank will see to that. The stock is figured correctly according to the goods on hand, but do they know that is all the stock they should have, for instance? The point is, how much did they make on each product, how much stock did they lose through shrinkage, waste or carelessness, how much did they spend for their own living, how much did it cost to operate the business?

Like Chart to a Ship

The point we are trying to make is that accounting, regardless as to how simple or elaborate it is, is the heart of the business, and removing the heart from anything from a cabbage to a human being will cause its death. True some things have a slow death and there are some businesses today undergoing this torture, or at least floundering along like a ship without a rudder and if they come out at the end of the year with a profit to their credit it will be due more to good luck than good accounting for their heads to chart their course by.

This is apt to be particularly true in the oil industry with the smaller concerns who run from one to four or five service stations and a bulk station or two, because in many cases they are new to the business. The larger established firms have their systems to follow which are often the result of several years' experience. The question the man at the head of a small business will ask himself is, can he afford to employ auditors and accountants necessary to run such a system? The majority of these experienced accountants and systematizers or effiency men, whichever term suits you best, are attracted to the larger firms because they can pay larger salaries for this class of work.

Benefit to Employes

As a matter of fact this work is often made to appear unnecessarily involved and intricate. With the proper forms and the proper system once installed, and the employes of the company acquainted with the nature and purpose of their reports and not looking upon them as so much unnecessary extra work the matter of carrying the system on from this point can be easily handled by any experienced and conscientious bookkeeper.

The necessity and advantages of systematic and accurate accounting is too often looked at from only the employers' standpoint; but it means as much or even more to the employe. The aim of every ambitious employe is to show results, and progress in his work. Their daily records and reports in the company's accounting system are the best possible proof to the heads of the company of the work they are doing and are much stronger evidence for or against promotion than somebody's sayso in the matter. A loose system of accounting naturally leads the employe

A Series By Request

National Petroleum News has had so many requests for forms and reports for use at service stations and for information in general on practical bookkeeping methods for the station operator it has had a special series of articles prepared, of which the accompanying is the first and introductory article.

The purpose is not to go at detail into the theory and practice of bookkeeping; but to discuss forms and reports, methods of checking and keeping track of sales and inventory that are peculiar to the oil marketing business because of the nature of the products it handles. The subject is dropped in this discussion at the point where these fit into a general set of books maintained at the home jobbing office, with which any experienced bookkeeper will be familiar.

The author of these articles is a man trained in the theory of accounting and also with several years experience in auditing service and tank stations and instructing agents and operators for a big jobbing company. He is writing from practical experience rather than theory. —Editor.

A New Heavy Duty Water Cooled

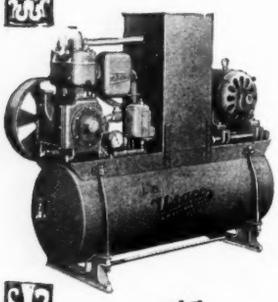
Usaco
AIR COMPRESSORS
TRADE MARK

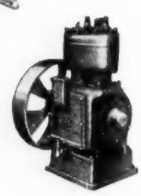
Two Stage Equipments
8 and 12 cu.ft. capacities

Single Stage Equipment
20 cu. ft. capacity

Air Tank
76 gal. capacity

Cooling Tank
30 gal. capacity





Here's a "bear" for service—a "husky" water cooled compressor built to withstand continuous service, hour after hour, day after day, for many years.

It is, therefore, specifically adapted for the large filling station having air-operated pumps or a number of outlets.

This L-B compressor is self-contained, fully automatic in operation, compact in design, and uncommonly sturdy in construction, with all parts readily accessible. New refinements, combined with Usaco features of proven worth, afford the most practical heavy duty compressor ever designed. The price, also, is surprisingly low. "Nuff" said. Investigate at once.

THE UNITED STATES AIR COMPRESSOR CO.
5314 Harvard Ave., Cleveland, O.

Foster Pipe Stills
Foster Oil Heaters

Extended heating surface and counter-current circulation afford decided economy in fuel and permit placing in very small space.

Low first cost, small amount of brick work in the setting and very low maintenance expense make these devices the most desirable ever offered for their purpose.

FOSTER SUPERHEATERS in your power boilers would give you the full and lasting benefits of superheat at lowest maintenance expense.

Write for literature

POWER SPECIALTY COMPANY

111 Broadway, New York

Boston, San Francisco, Philadelphia, Kansas City, Pittsburgh, Dallas, Chicago, London, England

to question just how fully the heads of the business know about the work of the men under them.

A good system of accounting has another advantage in that it is a protection to a conscientous and faithful employe from the carelessness or perhaps dishonesty of some other employe. Where the proper system places the responsibility on each employe for his share in the day's transaction of business, and makes him account fully for it through his reports and daily records, there is little chance for blame to be fastened on the wrong party for carelessness and mistakes. This knowledge is in itself a protection to each employe, and he should appreciate this assurance the company is giving him that he can do his own work and get full credit for it and not get the blame for others' mistakes.

Appeal To Warren Drivers Pays

LOS ANGELES, Oct. 4.—Making a particular appeal to women drivers is proving profitable for two partners, W. H. Hiefield and T. F. Howell, proprietors of the Pacific Service station in Oakland, Cal., according to the September issue of the "Ventura Mission," house magazine of the Ventura Refining Co.

According to the Mission, the "backyard of the station, the principal feature for drawing business, is a parking space 60 feet wide that runs for a full block. The location is right in the midst of the theater district and the partners have taken full advantage of this fact.

"It is the easiest thing in the world for the woman who goes to the matinee to leave her car with instructions to 'wash it while I am in the show.'

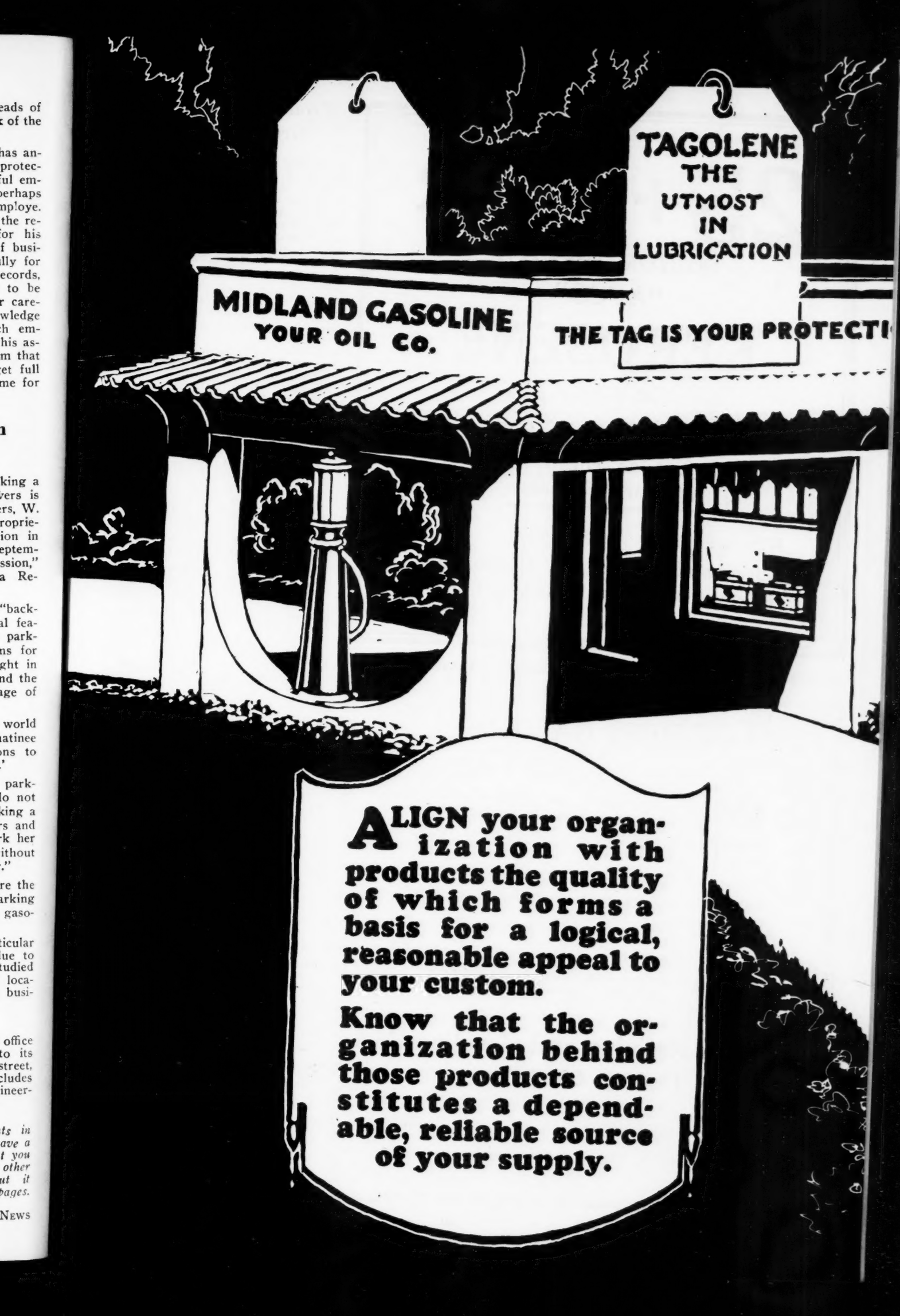
"The partners do not let their parking space get crowded. They do not offer monthly rates—they are making a frank appeal to casual theatergoers and so a woman finds it easy to park her car and easy to drive it away without the likelihood of a marred fender."

And it is not hard to guess where the woman who is in the habit of parking in this advantageous spot buys her gasoline and motor oil.

"The unusual success of this particular station", says the Mission, "is due to the fact that the proprietors have studied the particular advantages of their location and made their appeal for business accordingly."

DETROIT, Oct. 4.—Michigan office of Truscon Steel Co. moved into its new office building at 615 Wayne street, Detroit, Oct. 1. The office includes a complete organization with engineering department.

If you have made improvements in your plant recently you no doubt have a number of pieces of equipment that you would be glad to dispose of. Tell other companies in the business about it through our classified advertising pages.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LUBRICATION
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THE TAG IS YOUR PROTECTI
ALIGN your organization with products the quality of which forms a basis for a logical, reasonable appeal to your custom.
Know that the organization behind those products constitutes a dependable, reliable source of your supply.

25+COLOR

DOCTOR TREATED

"APCO"

KEROSENE

45 Gravity

41/3 Gravity *42/4 Gravity*

Just as cheap as
Ordinary Kerosene

Why not wire—

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WE are *Refiners* of the *Highest Quality* Oklahoma Crude fresh from our own wells, through our own pipe lines, and transported to the trade in our own tank cars.

Cushing stands back of every deal that's made, with assets and character that protects your profit. Our refined oils are doctor test.

Ask for quotations before placing your order for any petroleum products

Cushing Refining and Gasoline Co.
Cushing, Oklahoma

Refineries *Phones 611*
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Rex H. Winget, Gen. Mgr.

Production In Rumania Greater This Year

WASHINGTON, Oct. 4.—Production of crude oil in Rumania in the first half of 1923 totaled 758,,200 metric tons, or approximately 5,307,400 barrels, an increase of nearly 14 per cent over the first half of 1922 and 38 per cent above the corresponding period of 1921, according to a report to the Department of Commerce by acting Commercial Attache Louis E. van Norman at Bucharest.

The June production, amounting to 124,388 tons, showed a slight increase over May, and was 9 per cent more than that for June, 1922. The July output registered a still further increase totaling 125,518 tons. On Aug. 1 Baicoi crude oil was quoted at 27,500 lei per carload of 10 metric tons, a slight decline from the price of 28,500 lei quoted on July 1, and Moreni crude was quoted at 26,000 lei per carload as against 27,400 lei on July 1. (Exchange on this date was 200 lei to the dollar.)

Statistics for the production of refined products are not yet available for the first half of the year, but those for the first quarter show an appreciable increase over the first quarter of 1922. Comparative figures, showing the products obtained at the first distillation, are given in the following table:

Products	January-March 1922	January-March 1923
	Metric tons	Metric tons
Gasoline	66,041	73,817
Kerosene	43,829	48,723
Lubricating oil	21,157	28,589
Gas and fuel oils, etc.	128,119	143,179
Total	259,146	294,308
Crude run	265,035	299,805

Rumanian exports of refined petroleum products continued to increase during June, shipments of gasoline being particularly heavy. Exports for the six months' period, however, were slightly below those for the first half of 1922, the decline occurring in the kerosene shipments, other products showing an increase.

Export prices at the beginning of August showed some reductions from those quoted on July 1, the quotation on light gasoline having dropped from 18¼ cents per gallon to 16¼ and on heavy gasoline from 15 to 14¾. Prices for export kerosene and gas oil remained steady at 5¾ and 6¼ cents, respectively.

Land Title Settled

CASPER, Oct. 4.—Contest over certain acreage in the Lost Soldier field between the Funk Oil & Gas Co. and the Hughes Oil Co. has been settled. Funk interests filed placer locations several years ago on SW¼ of Sec. 2-26-90 and drilled a well to a depth of 800 feet without striking oil. It withdrew its equipment and ceased operations. Frank M. Johnson, and others, the original locators, then secured a prospecting permit and leased the ground to the Hughes Oil Co., which subsequently drilled in a large well. Funk Oil & Gas Co. then sought to reinstate itself and last June applied for patent. It is understood a compromise was finally reached and the Funk interests withdrew its patent application and the Interior department granted the Hughes faction an operating permit.

Three Charges Made In Tentative Tests Method For Flash

CLEVELAND, Oct. 4

THREE changes were made in the method of test for flash and fire points which were accepted as tentative by Committee D-2 of the American Society for Testing Materials at the June 25-29 meeting of the society at Atlantic City.

The revisions were in accordance with recommendations made by sub-comittee XII on flash, of which Ernest W. Dean, Standard Oil Co. of New Jersey, is chairman. The revisions modified Tentative Method of Test for Flash and Fire Points by Means of Open Cup (D92-21T).

The revised tentative method as accepted carries the serial desination D 92-23 T and specifies the use of the 1-inch immersion thermometer.

The changes proposed by the subcommittee and incorporated in the new tentative method involve, in the words of the sub-committee:

"1—A change in the plate supporting the cup. The present solid plate renders it difficu't to maintain the specified rate of heating for high flash oils and it was found that cutting out part of the portion of the plate beneath the bottom of the cup increased the convenience and did not appreciably change the results.

"2—The permitting of a more rapid rate of heating for the temperature range extending up to 100 F. below the flash point. This does not change the results and saves some time in making the test.

"3—Clarifying the directions so there will be no possibility of misunderstanding the directions for applying the flame when determining the fire point.

The new tentative method follows:

1—The open cup flash and fire test on all products except fuel oils and those having an open cup flash below 175 F. shall be determined in the Cleveland open cup.

Apparatus

2—The cup shall be heated by contact with a metal plate ¼ inch (0.635 cm.) in thickness and 6 inches (15.24 cm.) in width. The plate shall be of brass, cast iron, wrought iron or steel. In the center of the plate there shall be a plane depression 1-32 inch (0.079 cm.) in depth and of just sufficient diameter to fit the cup. There shall be a circular opening 2⅛ inches (5.50 cm.) in diameter cut through the plate centering with the center of the above mentioned depression. The plate shall be covered with a sheet of hard asbestos board ¼ inch in thickness and of the same shape as the metal plate. There shall be cut in the center of the asbestos board a circular hole just filling the cup. Heat may be supplied from any convenient source. The use of a gas burner, electric heater, or alcohol lamp is permitted but under no circumstances are products of combustion or free flame allowed to come up around the cup. The source of heat shall be centered under the opening in the plate and shall be of a type that will not produce local superheating. If a flame heater is used it may be protected from drafts or excessive radiation by any suitable type of shield that does not project above the level of the upper surface of the asbestos board.

ACCORDING to the policy of the American Society for Testing Materials, the accompanying method of test is carried as tentative for one year and during that time is subject to criticism or revision. In fact, criticism is invited from anyone in the oil industry. It is the aim of the society and of the American Petroleum Institute research division, to make the methods of test finally adopted the most useful possible to the whole industry.

Anyone having criticisms or suggestions of the method to make is invited to send them to the American Petroleum Institute, care Dr. Van H. Manning, director of research, 15 West 44th st., New York City.

3— The thermometer shall conform to the following specifications:

Type: Etched stem glass.
Total length, 305 mm.
Stem: Plain front, enamel back, suitable thermometer tubing. Diameter 6 to 7 mm.
Bulb: Corning normal, Jena 16 III, or equally suitable thermometric glass.
Length 13 mm. maximum.
Diameter, not greater than stem.
Actuating liquid: Mercury.
Range: Plus 20 deg. to plus 760 deg. F.
Immersion: One inch. The words "1-inch immersion" shall be etched on the stem and also a line around the stem to indicate the depth of immersion.
Distance to 20-deg. line from bottom of bulb: 40 to 50 mm.
Distance to 760-deg. line from top of stem: 30 to 45 mm.
Filled: Nitrogen gas.
Top finish: Red glass ring.
Graduation: All lines, figures and letters clearcut and distinct.
Scale graduated in 5-deg. divisions.
Scale numbered every 20 deg., the first and each succeeding 10-deg. line to be longer than the others.
Special marking: "A. S. T. M. Open Flash," serial number and manufacturer's name or trade mark etched on stem.
Accuracy: Error at any point on scale shall not exceed one-half smallest scale division up to 700 deg. F.
Test for permanency of range: After being subjected to a temperature of 700 deg. F. for 24 hours, the accuracy shall be within the limit specified.
Points to be tested for certification: 20 deg., 212 deg., 400 deg., 700 deg.

Procedure

4. (a) The thermometer shall be suspended or held in a vertical position by any suitable device. The bottom of the bulb shall be ¼ inch (0.635 cm.)* from the bottom of the cup and above a point half way between the center and back of the cup.

(b) The cup shall be filled with the oil to be tested in such a manner that the top of the meniscus is exactly at the filling line at room temperature. The surface of the oil shall be free from bubbles. There shall be no oil above the filling line or on the outside of the apparatus.

(c) The test flame shall be approximately 5/32 inch (0.397 cm.) in diameter.

Note.—For purposes of comparison it is recommended that a bead of suitable light colored material be mounted in a convenient position so that the size of the test flame can be determined. The device for applying the flame may be of any suitable type but it is suggested that the tip be approximately 1/16 inch (0.079 cm.) in diameter. If the device for operating the test flame be mounted in such a manner as to permit automatic duplication of the sweep of the test flame, the radius of the swing shall be not less than 6 inches.

(d) The test flame shall be applied as the temperature read on the thermometer reaches each successive 5-deg. mark. The flame shall pass in a straight line (or on the circumference of a circle having a diameter of not less than 6 inches) across the center of the cup and at right angles to the diameter passing through the thermometer. The test flame shall, while passing across the surface of the oil, be in the plane of the upper edge of the cup. The time for the passage of the test flame across the cup shall be approximately one second.

(e) the oil shall be heated at a rate not exceeding 30 deg. F. per minute temperature rise till a point is reached approximately 100 deg. F. below the probable flash point of the oil. Thereafter the rate of heating shall be decreased and for at least the last 50 deg. before the flash point is reached, the rate shall not be less than 9 nor more than 11 deg. per minute.

5. The flash point shall be taken as the temperature read on the thermometer when a flash appears at any point on the surface of the oil. The true flash must not be confused with a bluish halo that sometimes surrounds the test flame.

6. After determining the flash point the heating shall be continued at the specified rate of 9 to 11 deg. per minute and application of the test flame shall be made at the specified intervals until the oil ignites and continues to burn for a period of at least 5 seconds. The method of application of the flame shall be the same as for the flash point. The temperature read at the time of the flame application which causes burning for a period of 5 seconds or more shall be recorded as the fire point.

7. The flash point and fire point tests shall be made in a room or compartment free from air drafts. The operator shall avoid breathing over the surface of the oil. It is desirable that the room or compartment be darkened sufficiently so that the flash may be readily discernible.

*The immersion line engraved on the thermometer stem, will be 1-16 inch (0.159 cm.) below the level of the rim of the cup.

Total And 1-Inch Immersion, Conversion Table

FOR years there has been considerable discussion and debate over the question of basing the testing method for flash and fire on the total immersion thermometer as against the partial immersion thermometer. In the last year or two however, opinion has pretty well crystallized in the oil industry in favor of the 1-inch immersion basis, although some few companies still use the total immersion method.

The difference between the two methods is herewith explained by one of the leading oil industry chemists and a conversion table is given to compare readings from one scale with the other.

"The mercurial thermometer is based upon the fact that mercury expands when heated practically directly proportional to the increase in temperature.

"When the mercury in the bulb of the thermometer is heated, it expands, forcing a thread of mercury up into the stem, where, unless the stem is heated, the mercury is not heated. Hence the mercury up in the cool stem does not expand as it should, because it is not hot.

"It used to be the custom to 'point' all thermometers with all the mercury at the temperature of the pointing bath, which was accurately known. To do this, the thermometer was immersed in the pointing bath to the top of the mercury column in the stem.

"Many thermometers are still pointed in this manner. Naturally, such thermometers do not read the correct temperature, unless all of the 'emergent stem,' as well as the bulb, is at the temperature of the liquid, the temperature of which it is desired to know. When only one inch, or a part of the emergency stem, is immersed in the hot liquid, the reading is lower than the actual temperature of the liquid. The true temperature of the liquid may be found, however, by adding a computed 'emergent stem correction.'

"In computing the emergent stem correction, there are taken into consideration, as factors materially affecting the correct reading:

"1. The relative expansion of mercury and the glass used in that particular thermometer.

"2. The length of the emergent stem.

"3. The mean average temperature of the emergent stem.

"4. The true temperature of the bath.

"Consider now the use of a thermometer scaled for total immersion, and used to determine the temperature of the oil in the Cleveland open cup when it flashes, or when its fire point is reached: —It is aparent that conditions, 1, 2 and 3, above, are all going to vary for every different individual thermometer. Condition 1 may be fairly constant for thermometers made by one maker, but will vary for thermometers of different make. Condition 2 will vary for all thermometers. Lay any two thermometers on the table with the bulbs even with the edge, and see if their 500° points are even. Condition 3 will vary with every determination.

"Hence it is apparent that it is impossible to give a table of comparisons betwen readings of 'total immersion' thermometers used with the Cleveland open cup, and the true temperatures of the oils in the cup. Approximate relations, only, and these for one particular type of thermometer, can be given.

"An accurate thermometer, scaled for 1-inch immersion, gives very near the true temperature of the oil in the cup, without applying stem corrections, when it is immersed to the 1-inch marked on it.

"I have taken a particular thermometer, scaled for total immersion, and much used with the Cleveland open cup. This thermometer is made by Tagliabue. It is 15 inches long, solid glass stem with the graduations and numbers engraved on it, graduated from 30 to 700° F. The bulb is 9/16 inches long. The diameter of the stem is approximately ¼ inch, and the bulb is a trifle smaller than the stem. The 400° mark is 8 inches above the bottom of the bulb. This thermometer has been tested by the Bureau of Standards, and the factor 0.000085 is given by that bureau as the coefficient of relative expansion of mercury and of the glass of the thermometer. I have had to assume figures for the mean average temperature of the emergent stem. For this thermometer I have, then, computed emergent stem corrections at various temperatures, when it is immersed 1-inch. On the next sheet is given the actual readings of the thermometer in one column, while in the third column are given the true temperatures of the oil bath, or the corresponding temperatures that would be shown by an accurate thermometer, scaled for 1-inch immersion."

LOS ANGELES, Oct. 4.—Ben K. Stroud of the research organization of the National Tube Co., with headquarters at Los Angeles, is spending the month at the main office and laboratory in Pittsburgh carrying on extensive tests calculated to further develop oil field equipment against the deeper drilling needs of the future.

Conversion Table

Average Total Immersion Thermometer Readings To Average 1-Inch Thermometer Readings

Average readings of an Accurate Thermometer Scaled for Total Immersion and Used with Cleveland Open Cup-15" Long.	Correction to be Added to Total Immersion Thermometer.	Average readings of an Accurate Thermometer Scaled for 1 Inch Immersion and Used with Cleveland Open Cup.	Average readings of an Accurate Thermometer Scaled for Total Immersion and Used with Cleveland Open Cup-15" Long	Correction to be Added to Total Immersion Thermometer.	Average readings of an Accurate Thermometer Scaled for 1 Inch Immersion and Used with Cleveland Open Cup
200	1	201	460	15	475
210	1	211	470	15	485
220	1	221	480	16	496
230	2	232	490	17	507
240	2	242	500	17	517
250	3	253	510	18	528
260	3	263	520	19	539
270	4	274	530	20	550
280	4	284	540	20	560
290	5	295	550	21	571
300	5	305	560	22	582
310	6	316	570	23	593
320	6	326	580	23	603
330	7	337	590	24	614
340	7	347	600	25	625
350	8	358	610	25	635
360	8	368	620	26	646
370	9	379	630	27	657
380	10	390	640	28	668
390	10	400	650	28	678
400	11	411	660	29	689
410	12	422	670	30	700
420	12	432	680	31	711
430	13	443	690	31	721
440	13	453	700	32	732
450	14	464			

Recapitulation on Basis of Nearest 5° F. Corrections:

60–245	0	60–245	505–565	20	520–585
250–345	5	250–350	570–635	25	590–660
350–425	10	355–435	640–705	30	665–735
430–500	15	440–515	710–775	35	740–800

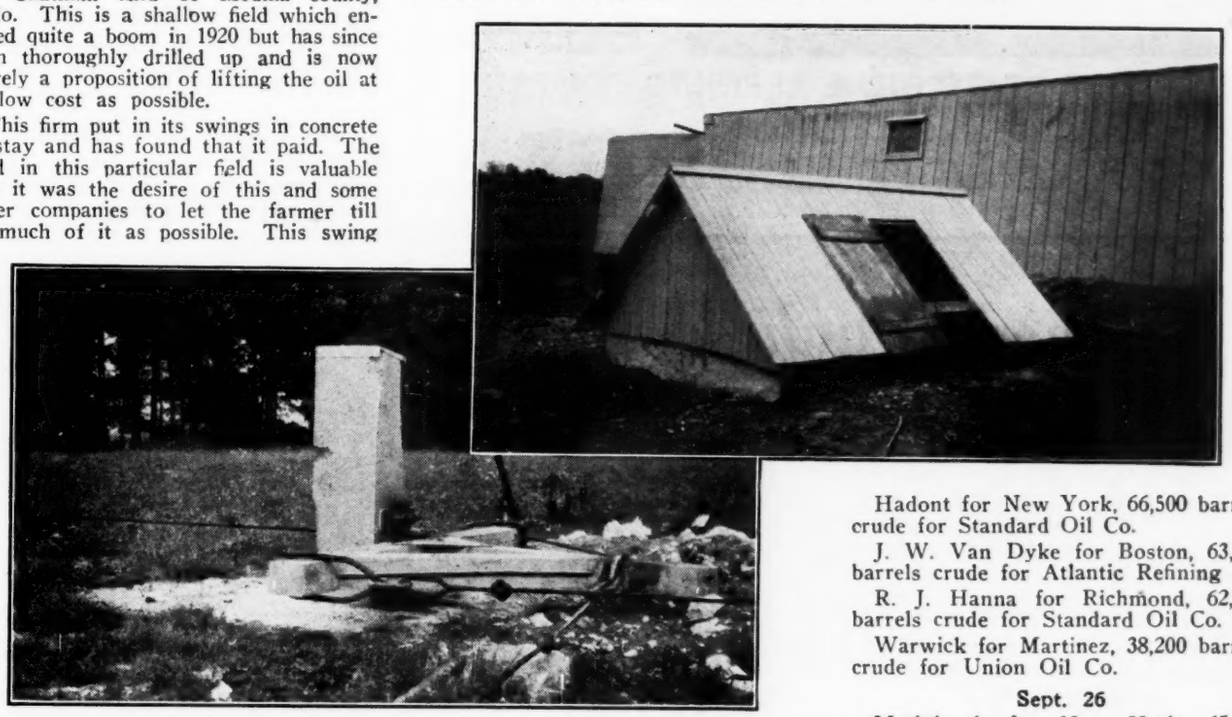
Lease Equipment Wrinkles

CLEVELAND, O., Oct. 4.—Every now and then somebody figures out a way to do something that results in a saving of money and adds to the appearance of a lease.

The accompanying picture of a well-installed swing for shackle lines is on the Ross lease of Dempsey & McGrath in the Chatham field of Medina county, Ohio. This is a shallow field which enjoyed quite a boom in 1920 but has since been thoroughly drilled up and is now merely a proposition of lifting the oil at as low cost as possible.

This firm put in its swings in concrete to stay and has found that it paid. The land in this particular field is valuable and it was the desire of this and some other companies to let the farmer till as much of it as possible. This swing turns the corner and pumps wells in either direction, instead of having the shackle lines run direct from band wheel to wells and thus clutter up a great deal more farm land. E. R. Edson & Son, who pioneered in the field, have all their leases arranged in this manner.

The other view is of a sump made of concrete five feet deep and with walls five inches thick. The shed-like structure back of it covers the lease storage. Trenches lead from all the tanks inside to a 4-inch pipe which carries all water and oil which leaks from or is drawn from the tanks to the sump. In drawing off water from the tanks there is generally a little oil drawn off and this is all carried through the trenches and into the sump where from time to time a small pump is set and the oil pumped back into the tanks.



California Crude Oil Shipments Less

By Special Correspondent

LOS ANGELES, Oct. 3.—Petroleum shipments from this port during the week of Sept. 22 to 28 inclusive totaled 2,738,175 barrels, transported by 41 tankers. The shipments averaged 391,168 barrels per day.

Thirteen of the tankers carried petroleum to Atlantic seaboard points, eight went to foreign ports and 20 had cargoes for the coastwise trade.

During the previous week the tankers shipments were somewhat heavier, amounting to 45 loads, totaling 3,304,840 barrels. For the past week the oil exports from here were as follows:

Sept. 22

Edward L. Doheny, Jr., for New York, 74,875 barrels crude for Pan-American Petroleum.

William Rockefeller for New York, 115,000 barrels crude for Standard Oil.

Harold Walker for Balboa, 63,250 barrels crude for Pan-American Petroleum.

Kewanee for Avon, 25,000 barrels crude for Associated Oil Co.

Frederick R. Kellog for Balboa, 57,500 barrels crude for Pan American Petroleum Corp.

K. R. Kingsbury for Richmond, 66,900 barrels crude for Standard Oil Co.

Los Alamos for Puget Sound, 25,800 barrels crude for General Petroleum.

Sept. 23

Mojave for Puget Sound, 63,000 barrels crude for General Petroleum Corp.

El Lobo for Vancouver, 36,625 barrels crude for Imperial Oil Co.

Hualco for Avon, 73,000 barrels crude for Associated Oil Co.

Sept. 24

Lubrico for Richmond, 66,200 barrels crude for Standard Oil Co.

Frank H. Buck for Avon, 66,975 barrels crude for Associated Oil Co.

U. S. tanker Ramapo for Yokohama, 70,000 barrels crude for U. S. Navy.

John D. Archbold for New York, 118,300 barrels crude for Standard Oil Co.

W. S. Miller for Richmond, 61,400 barrels crude for Standard Oil Co.

Durango for Baltimore, 66,050 barrels crude for Struthers and Barry.

Halo for Boston, 66,050 barrels crude for Struthers and Barry.

Sept. 25

Montebello for Martinez, 74,075 barrels crude for Union Oil Co.

San Felix for Tampico, 119,650 barrels crude for Eagle Oil Co.

Hadont for New York, 66,500 barrels crude for Standard Oil Co.

J. W. Van Dyke for Boston, 63,700 barrels crude for Atlantic Refining Co.

R. J. Hanna for Richmond, 62,650 barrels crude for Standard Oil Co.

Warwick for Martinez, 38,200 barrels crude for Union Oil Co.

Sept. 26

Matinicock for New York, 65,125 barrels crude for Standard Oil Co.

Paul Shoup for Avon, 66,000 barrels crude for Associated Oil Co.

Frank G. Drum for Avon, 65,975 barrels crude for Associated Oil Co.

Col. E. L. Drake for Columbia River, 31,650 barrels crude for Standard Oil Co.

K. R. Kingsbury for Richmond, 66,900 barrels crude for Standard Oil Co.

Oleander for Balboa, 76,000 barrels crude for Shell Co.

Birkenhead for New York, 77,950 barrels crude for Standard Oil Co.

Sept. 27

Hampton Roads for Fall River, 68,450 barrels crude for Associated Oil Co.

Deroche for Martinez, 66,050 barrels crude for Union Oil Co.

William G. Warden for New York, 100,300 barrels crude for Standard Oil Co.

Sept 28

Lubrico for Richmond, 66,200 barrels crude for Standard Oil Co.

La Brea for Port San Luis, 57,625 barrels crude for Union Oil Co.

Abertolite for Campana, Chile, 61,750 barrels crude for Imperial Oil Co.

Hulaco for Avon, 73,000 barrels crude for Associated Oil Co.

San Macedonia for Buenos Aires, 50,750 barrels crude for Eagle Oil Co.

W. W. Mills for Philadelphia, 77,500 barrels crude for Pure Oil Co.

John D. Rockefeller for New York, 64,850 barrels crude for Standard Oil Co.

W. S. Miller for Richmond, 61,400 barrels crude for Standard Oil Co.

Sunshine Products

High Grade and Uniform Quality

60-62 Gravity, S R Gasoline, 400 End.

58-60 Gravity, S R Gasoline, 437½ End, 140 Initial.

56-58 Gravity, S R Gasoline, 450 End and better.

54-56 Gravity, S R Gasoline, 460 End and better.

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Small Enough

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Young Enough

To Inject Pep And Enthusiasm
Into that thing—Called Service

Old Enough

To Know That Highway Natural
Gasoline Products Are Business Builders

We are specializing in the following grades of motor natural gasoline, and can highly recommend them for winter use:

Highway Gasoline	60-62,	440 E. P.
" "	64-66,	437 E. P.
" "	66-68,	435 E. P.

Natural Gasoline, Grades B, D, E, & F.

The latter for refiners and jobbers who prefer blending their own products.

HIGHWAY OIL REFINING CORP.

Tulsa Okla.

Legislatures To Open Guns On Gasoline

CLEVELAND, Oct. 4.—Several state legislatures are to meet in special session this fall and gasoline tax measures will be considered by most of them. Tax measures now are being considered by the legislative bodies of Alabama and Arkansas.

The Arkansas legislature was assembled Sept. 24 and among the governor's recommendations was one to validate all oil and gas leases executed heretofore by directors of school districts. Highway, motor and gasoline taxes also will be taken up. One bill proposes a tax of 4 cents a gallon on gasoline and 10 cents a gallon on motor oil.

The Alabama legislature has before it a bill which if enacted would permit counties of the state to hold elections to determine the amount of tax on gasoline. This measure, it is evident would lead to infinite difficulties and expose the oil industry to most of the disagreeable elements of petty politics.

Motor and gasoline taxes will be taken up at the special session of the Arizona legislature this month. The legislature last winter enacted a 3-cent gasoline tax measure and a decision of the state's supreme court now opens doubt as to whether a 1-cent tax statute previously in force was repealed by the new statute. If not, state officials say, a 4-cent tax on gasoline should be in effect.

The Georgia general assembly will convene Nov. 7 to consider tax measures. The Michigan legislature will convene early in November but subjects it will consider have not been determined. The Iowa legislature also will meet in special session Dec. 4.

Report On British Storage Rules

WASHINGTON, Oct. 4.—A copy of a British government publication entitled "Report from the select committee of the House of Lords of the Petroleum Bill (H. L.) together with the proceedings of the committee, minutes of evidence and appendices" has been received from an American Charge d'affairs ad interim in London and is available for consultation by interested parties.

This bill, which was proposed for the regulation of the storage and handling of petroleum in England, has been definitely rejected in its present or any amended form, according to a report from the American Consulate General in London, and as is evidenced by the above mentioned committee report.

It is said, however, that it is not improbable that some legislation along lines suggested in the committee's report may soon be introduced into parliament and enacted into law, as the "Petroleum Act, 1871" and the amendatory statute of 1879 are not considered adequate to the exigencies of so large an industry which is now con-

troled mainly by local rules and methods oustide the statutes.

It is said to be likely that any such new law will place the supreme licensing and supervising authority in the hands of Petroleum Department instead of the Home Office. The committee's report presents a summary of authoritative views on the different phases of the whole matter of the handling, storage and transportation of explosive oils in England.

To Promote Better Public Relations

Staff Special

BARTLESVILLE, Oct. 4.—Keith Clevenger, who for some time past has been director of public relations for the Associated companies, Abilene, Kan., has been placed in charge of the Public Relations department of the Gas Division, Empire companies.

The general object of this department of the gas division is to bring about a more thorough understanding of the problems of natural gas production, transmission, and distribution, on the part of newspapers, civic organizations and schools. Knowledge relative to the value and efficiency of natural gas as heating, cooking, and all-purpose fuel will be disseminated through preparation of intelligent and truthful information.

Mr. Clevenger has had a wide newspaper and civic experience in Kansas, covering a period of 16 years. During that time he has been editor and publisher of a Kansas newspaper, and secretary and manager of the Kansas State Chamber of Commerce. He gained a valuable knowledge of utility problems and operations through his experience as supervisor of public relations of electric light, power, gas and telephone utilities in 260 Kansas and Nebraska towns.

Expects Large Production

CASPER, Oct. 4.—United States Royalty Co., owned largely in Salt Lake City, was reported by an officer recently to have nine rotary drills working on its properties at Signal Hill, Huntington Beach and Santa Fe Springs, California, and expected to bring production up to 50,000 barrels daily this fall. It also owns 10 per cent interest in 80 acres of producing ground in Salt Creek. Last spring it was authorized to sell 300,000 shares of its stock at 25 cents (par) by the Utah public utilities commission. Since September, 1922, it has been paying dividends at the rate of 24 per cent a year. Capitalization recently increased from 1,000,000 to 4,000,000 shares. W. R. Calvert is vice-president. Company controls United States Refining Co. which is completing an absorption plant in California with a daily capacity of 20,000 gallons of gasoline. Last week it completed two additional wells one of which came in at 4733 feet for 5,000 barrels.

Do you make a practice of reading the "Oil Industry Exchange" page each week? Don't miss it—you will find a great many interesting items there in every issue.

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Why Should Price Be Uniform When Costs Differ?

By W. Frederick Suender

DISCUSSION prevails regarding what may be considered a proper service charge for gasoline. The industry and the public are more or less familiar with the F. O. B. refinery prices and the difference in rail transportation to various points of distribution.

Meetings are held and resolutions passed advocating the elimination of existing differentials between various localities in both curb and tank wagon prices.

As a matter of fact, the now existing prices in the U. S. are more uniform than actual costs justify, and they are so for the following reasons:

1. The development of the "drive-in station" by the industry taking the burden of wheelage from the distributor's truck and dividing it among his various customers.

2. The fact that the distribution of gasoline is more or less concentrated in the hands of large companies, who in making a uniform price for several localities, treat their entire distributing system as a single unit, grouping their costs.

Out of every million gallons of gasoline sold in the U. S. the industry can and does supply the following quantities for the towns indicated and their adjacent territory.

	(Gals) Town and Suburbs	(Gals) In Town (Gals)	In Tank Wagon area (Miles)	Relative Distance T. W. del.
Two Rivers, Wis.	561	84	477	1.00
Port Angeles, Wash.	592	98	494	1.71
Henderson, N. C.	525	47	478	1.16
Covington, Va.	534	42	492	1.08
Medford, La.	514	30	484	2.45
Brigham, Utah	524	57	467	3.52

Curb price

Selling gasoline at a fixed post requires the identical paraphernalia at Medford, La., as for Port Angeles, Wash. The interest on invested capital—taxes and wages of attendants, insurance, etc. are a charge based upon TIME; during this same measure of time, regardless of selling ability, initiative, and service one location will consume in excess of three times as much as the other.

All of the above towns in review are between 5000 and 10,000 inhabitants. It will hardly be claimed that as far as initial investment of service station or wages of its attendants is concerned, these factors can be controlled to conform with the above relation in output.

Tank Wagon

These quantities are more or less uniform for the above localities, but the distance travelled to deliver are as 1 is to 3.52; to serve the suburbs of Brigham, Utah, as compared to Two Rivers, Wis., will require 3.52 times as many as many men in the same time; or 3.52 times as much time with the same truck and man.

The above examples are typical, not exaggerated and are daily duplicated in and out of 1493 towns, boroughs, villages and cities of 5000 or over in continental U. S.

The examp'e as stated predisposes a large unit acting as a monopoly: When two or more concerns operate in the same locality you divide the gallonage but not the DISTANCE, TIME or EQUIPMENT.

The permissible radii of tank wagon activity range from:

3.75 miles in Rhode Island, 4.25 miles in Massachusetts, 5.25 miles in connecticut, 60.75 miles in Wyoming, 87.75 miles in New Mexico, 165.75 miles in Nevada for towns and cities of 5000 and over.

The answer to the above is that distributing points are not restricted to towns of 5000 or over and are located in sma'ler towns to reduce the radii of activity.

That is so; but it is not advocated that the municipality desiring service go down in their pockets for the additional initial expenditure of permanent investment—such as yards sidings, tankage, etc. and it has yet to be demonstrated that where a corporation buys a man's TIME a reduction in wages can be effected, to make such wages conform with the company's ability to use the TIME purchased continuously: the little trip of 165.75 miles by tank wagon or truck out of Reno, Nev. to your furthest customer will produce 836 gallons out of every million gal ons sold in the U. S. By building and maintaining two stations in Nevada you reduce your furthest haul to 117.25 miles; three stations, to 95.75 miles; four stations, to 82.75 miles; five stations, to 74.50 miles; 10 stations, to 52.50 miles; 20 stations, to 37.25 miles.

AND THE OBTAINABLE GALLONAGE REMAINS AS ABOVE, 836 gallons.

Tank Wagon Deliveries
Bulk Distributing Station Possibilities
Relative Obtainable Gallons per Mile

	Unit
Globe, Arizona	1
Ogden, Utah	2
New Iberia, Louisiana	3
Elkins, W. Va.	4
Winfield, Kansas	5
Everett, Wash.	6
La Porte, Ind.	8
Superior, Wisconsin	9
Wichita, Kansas	10

Since the time of actual discharge of 10 ga'lons at destination is not 10 times as great as one gallon, and the one mi'e of delivery time is identical, there must be quite a difference in delivery cost per gallon: If not one cost why one selling price?

Serving You—The Oil Industry

On The Mountains Of Oil Journalism

YOU don't really realize what the country is like until you get up in the mountains and look down upon it. Then you get an idea what a farm really looks like. You can see the relationship of fields and pastures and woods and compare one farm to many farms spread out before you.

So in oil writing instead of driving you constantly through a mass of detail of wells, refineries and tanks, etc., which don't mean any more and are no more interesting than the fence posts you run by on the country road—we take you up on a few mountain tops that you may see the whole field of operations—view an entire oil field at one time, or a whole state, or country.

Then you can study it, like you do the patch work of farms and fields below you in the valleys, and get the relationship of all the fence-post-like facts and size it up. Is it going ahead or behind?

"Larry" Smith of our Cleveland office has taken you up on the mountain tops of Wyoming that you may see that field as a whole—and now Paul Wagner of our Houston office is in California giving you your second mountain view of the year of that big field.

These are the mountain tops of oil writing—the mountain views of American business men.

Cleveland, O.
Oct. 5.

By W. C. Platt - - - - Editor.

Invite Criticisms On Proposed Code Of Tolerances For Tanks

WASHINGTON, Oct. 4

THE annual conference of weights and measures officials of the United States, held here last May under the auspices of the Bureau of Standards, tentatively adopted a code of specifications and tolerances with which they believe truck and wagon tanks should conform. The purpose of the code is to insure that tanks and compartments of tanks which are used as measures, as they almost universally are, should be accurate.

Expressing the desire to be fair to the manufacturers of tank trucks and not to impose any undue hardships on them, the committee on specifications and tolerances of the conference, of which F. S. Holbrook of the Bureau of Standards is chairman, drew up the code in tentative form and recently submitted it to manufacturers of vehicle tanks with an invitation to them to study the provisions and submit to the committee any comments, suggestions or criticisms that they cared to make, to the end that these may be considered by the conference before any code is put into effect.

The tentative code follows:

Notes

"The following specifications and tolerances shall apply to vehicle tanks and their accessory piping, valves, etc., in those cases in which the tanks or the compartments thereof are used as measures to determine the amount of liquid delivered, and such use shall be permitted only when these specifications and tolerances are complied with.

"If a tank is damaged in any way (as from collision, etc.), or if reparis which might in any way affect the accuracy of measurement are made, such tank shall not again be used as a measure until inspected and, if deemed necessary, tested, by the weights and measures official.

"In determining or checking the capacity of tanks, water is recommended as a testing medium. Mineral oil should never to be used because the change in volume due to temperature variations is large and evaporation of the oil during the test may result in very serious inaccuracies in the calibration.

Definition

"A vehicle tank shall, for the purpose of these specifications and tolerances, mean a container, which may or may not be subdivided into two or more compartments, mounted upon a wagon or automobile truck and used for the delivery of liquids. The term "compartment" shall mean the entire tank whenever the tank is not subdivided; otherwise it shall mean any one of those subdivided portions of the tank which is designed to hold liquid.

Specifications

"1. All tanks and all indicators, piping, valves, etc., attached thereto and used in connection therewith, shall be of such design, construction, and materials that they may reasonably be expected to withstand ordinary usage without impairment of the accuracy of measurment.

"2. An indicator shall be provided which shall be centrally located with respect to the longitudinal axis of the compartment. The lowest part of this indicator shall clearly and distinctly define the height to which the compartment must be filled in order to contain its marked capacity. If this indicator is adjustable it shall be so constructed that it can be sealed in such a manner that its position can not be changed without destroying the seal.

"3. The indicator shall be so positioned, that, when a compartment is filled to the indicator, there will remain an expansion space of not less than 2 per cent of the nominal capacity of the compartment.

"4. The filler opening of each compartment shall be so positioned as to allow an indicator in this opening to be located as provided in specification No. 2. The filler opening shall be of such a size as readily to permit of visual inspection of the bottom of the compartment.

"5. Each compartment shall be provided with suitable venting means to prevent the formation of air pockets by permitting the escape of air from all parts of the compartment designed to be filled with liquid and to permit the influx of air to the compartment during the process of delivery.

"6. Each tank, and all delivery piping attached thereto and used in connection therewith, shall be so designed and constructed and shall be so mounted that, when the vehicle upon which they are mounted is standing in any position upon a surface making an angle of 5 per cent (approximately 3°) with the horizontal, complete delivery may be made from any compartment through the delivery faucets or valves, whether other compartments are full or empty. If a compartment has more than one discharge outlet, connections from each outlet shall be made to a single line of piping in all cases where either line of piping would otherwise be more than 24 inches long. If two delivery faucets or valves are provided for one compartment, the line of piping shall be branched at such a point that the length of line from either faucet to the point where the line is branched shall not exceed 24 inches.

Pipe Capacity Excluded

"7. When emergency valves, designed to closse the discharge outlets from compartments, are provided, the capacities of such compartments shall

More Unnecessary Activity By Officials

AT FIRST glance it would appear that the only effect to be expected from the drafting of the above code of specifications and tolerances would be to add to the power and authority of the departments of weights and measures in the states where it may be adopted. And one way or another, any added responsibility and duties handed over to a state department usually seems to make it possible to find jobs for a few more politicians.

It is another outbreak of the constantly increasing tendency of government officials big and little to meddle with the conduct of the oil industry.

The attempt to put over this code of specifications and tolerances has not even the talking point that it is protecting the public because the public does not buy gasoline in tank or compartment dumps except a few big owners of truck fleets and these are careful buyers who may be depended upon to get what they pay for.

At least 95 per cent of tank truck deliveries in quantity are made either to the stations of the company owning the truck or to dealers who resell the stuff. As opposed to the gasoline curb pump where the customer has no means of knowing whether the quantity of gasoline he ordered actually goes into his tank or not, the dealer taking a tank or compartment delivery can see what is in the tank before the driver starts unloading, can tell how much he got by gauging his own tank and if he is in doubt as to whether the truck tank contains its rated capacity he can make the driver bucket it out.

Regardless of any code of tolerances that may be officially adopted it is going to be mighty hard to make any service station manager or retail dealer accept less gasoline than he pays his good money for. And he knows what he is getting if he is at all up on his toes.

And the truck tank manufacturers, urged by their own desire to turn out a better product and the suggestions of the oil industry, already have made standard most of the provisions of the code, along with some improvements that the officials never thought of.

There may not be much harm in the latest activity of the weight and measures guardians but at best it seems rather a waste of time.

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for dispensing lubricating oils to the trade

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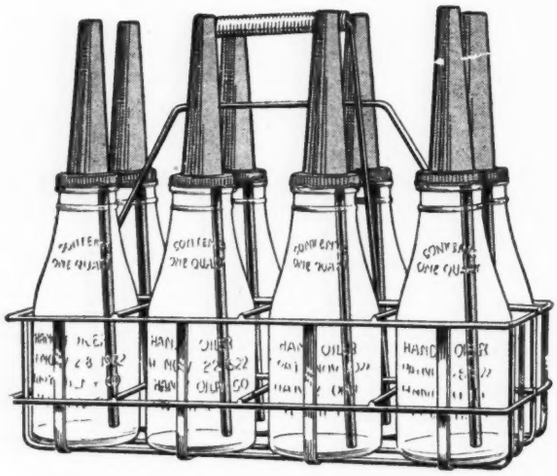

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be construed as excluding the capacity of the piping leading therefrom. Such emergency valves shall be so controlled that they may be independently opened; however, the construction may be such that all these emergency valves which may be open at any time may be closed simultaneously, either by automatic or manual means.

"8. Each compartment shall be plainly and conspicuously marked on at least one side thereof with its capacity to the nearest half-gallon, as follows: 'Capacity —— gallons to bottom of indicator,' and also with the date of the most recent calibration. In addition, each compartment of a tank having two or more compartments shall be plainly and conspicuously marked with a designating mark, such designating mark to be different for each compartment of a particular tank. All delivery faucets or valves on such tanks shall be plainly and conspicuously marked with designating characters correponding to those of the compartments with which they are connected.

"9. All markings, figures and graduations required under these specifications shall be of such size, design, material and location and shall be so applied or affixed that they will not tend easily to become obliterated or illegible.

"10. All tanks and all devices designed to be attached thereto and used in connection therewith shall be of such consruction that they are not designed to and may not be used to facilitate the perpetration of fraud.

Tolerances

"The tolerance to be allowed in excess or deficiency on all vehicle tank compartments which are being tested by the weights and measures official for the first time to verify the accuracy of a capacity marked thereon by a manufacturer or user shall be the values shown in the column headed "On first test" in the following table. The tolerance to be allowed in excess or deficiency on all subsequent tests made by the official to verify the accuracy of a marked capacity shall be the values shown in the column headed, 'on subsequent test.'

"These tolerances are to be applied to the difference between the actual result of the calibration and the marked capacity of the compartment. Whenever the result of a calibration indicates that the marked capacity of a compartment is not correct within the tolerance to be applied and the capacity of the compartment is adjustable, then the result of the calibration shall be taken as the basis of an adjustment and the adjustment shall be so made that the capacity of the compartment agrees as nearly as may be with such marked capacity. When the capacity of the compartment can not be adjusted to agree with the marked capacity then the compartment shall be remarked in accordance with the provisions of Specification No. 8."

Tolerances

Capacity of Compartment		Tolerance	
From	Up to and Including	On first Test	On subsequent Test
Gallons	Gallons	Gallons	Gallons
	175	½	½
175	325	½	1
325	475	¾	1½
475	575	1	2
575	725	1¼	2½
725	875	1½	3
875	975	1¾	3½
975	1125	2	4
1125	1325	2½	5
1325	1500	3	6

Here And There

KANSAS CITY, KAN., Oct. 4. THE WINTERS OIL CO. is building a modern service station on the new cement road just opened connecting Kansas City with Leavenworth, Lawrence and Topeka, Kan. A new station was also opened by the company at Lenexa, Sept. 15.

J. S. Winters, owner of the Winters Oil Co. says: "It is our policy to advertise as well as to urge through our salesmen that we have just two things to sell: quality and service. If we can show we have both, we are entitled to the customer's business; if we lack either, we have no right to ask it. Therefore, our success lies within ourselves."

* * *

GRAND RAPIDS, MICH., Oct. 4.—George W. Tubbs, president of the George W. Tubbs Oil Co., reports that his company will open one of the most beautiful and modern service stations, with two latest type draining racks, in this city. The company is increasing its storage at its wholesale plant on Grandville ave., making a storage capacity of 100,000 gallons for Ace Hi gasoline, which it handles.

* * *

ST. JOSEPH, MICH., Oct. 4.—The city commission of Benton Harbor, Mich., voted on Sept. 25 that all curb pumps in the city must go by May 1 of next year. This action was due to the keen competition there, some oil companies having induced garage men to change brands of gasoline handled and tearing up sidewalks to do it, according to J. J. Thiesen, secretary of Sieber Oil Co.

* * *

BOYNE CITY, MICH., Oct. 4.—General Oil Co., Boyne City, distributors of Sinclair products, has been granted permision to erect a drive-in service station. The station will be of brick and stucco and will have a large canopy. Modern features such as drain pit and air and water standards will be incorporated.

* * *

PENSACOLA, FLA., Oct. 4.—J. H. Sherrill of the Sherrill Oil Co., reports the installation of a compounding plant in this city; also the opening of a new bulk distributing station at Opp, Ala. The company is building a service station at Panama City, Fla., where the town council has ordered the removal of all curb pumps, Mr. Sherrill says.

* * *

KALAMAZOO, MICH., Oct. 4.—E. L. Hill, manager of the National Refining Co. here, reports the opening of three new service stations at Flint, also the installation of three trucks and a warehouse about two months ago. Mr. Hill says they are doing fine business.

* * *

SAN ANTONIO, TEX., Oct. 4.—Joe A. Noake, formerly connected with the Southern Equipment Co. here, recently entered the sales department of Witherspoon Oil Co. G. E. Smith is in charge of the valuation department having previously been connected with James I. Tucker, appraisal engineers at Oklahoma City, Okla. Another addition to the staff of Witherspoon Oil Co. is Miss Carrie Bunch, who was previously employed at the First National Bank of Corsicana, reports Roy Wight, sales manager of the company.

* * *

BRIDGEPORT, CONN., Oct. 4.—William J. McCarthy, president of the New England Gas & Oil Co., formerly known as the D. & C. Oil Co., reports that his company has now in operation six new service stations, all prominently located, and doing fine business. The company expects to handle Sunoco gasoline and introduce it in this territory, says Mr. McCarthy.

* * *

OIL CITY, PA., Oct. 4.—Invitations have been sent out for the wedding on Oct. 17 of Howard C. Dickey of the Oil City office of Jas. B. Berry's Sons Co. Charles Burns, Berry's Boston representative, recently married a New York girl, according to announcements received by his home town friends here.

* * *

DURAND, MICH., Oct. 4.—Western Oil & Gas Distributing Agency has installed visible gasoline and oil pumps at its station here. The agency, managed by E. Henry, has put in concrete drives at its stations here and at Bancroft and is completing pavement at its Byron station.

* * *

LOUISVILLE, KY., Oct. 4.—The Stoll Oil Refining Co. is building its ninth service station in this city. It also operates stations at Lexington and Bowling Green, and at Cincinnati, O., as well as bulk stations in Indiana, Ohio and Kentucky, according to Berry V. Stoll, salesmanager.

* * *

LOUISVILLE, KY., Oct. 4.—The Aetna Refining Co. has in process of construction its sixth service station in this city. The Gulf Refining recently opened its tenth station here, and a number of stations are being built by the Louisville Service Station Co.

* * *

LIVE OAK, FLA., Oct. 4.—H. A. Collins, formerly agent for the Standard Oil Co. at Gainesville, Fla., has resigned and is now in charge of the "Carolina Filling Station" at High Springs, where he is handling Standard's products exclusively, according to H. H. Hair.

* * *

SALINE, MICH., Oct. 4.—J. F. Staebler and P. R. Kempf, of the Staebler-Kempf Oil Co., were to leave for Tulsa Oct. 6 to attend the International Oil Exposition.

* * *

LOUISVILLE, KY., Oct. 4.—C. T. Collings chairman of the board of the Standard Oil Co. of Kentucky, returned last week from a four months' sojourn in Europe, reports A. K. Whitelaw, vice president and general manager of the Standard Oil Co.

Mr. Whitelaw also says that friends of J. B. Brown, director of the Standard Oil Co., and president of the National Bank of Kentucky, have been urging him to accept the gubernatorial nomination for the vacancy caused by the death of J. B. Cantrill.

* * *

LOUISVILLE, KY., Oct. 4.—R. R. Johnston, assistant manager of the Gulf Refining Co. here, was called to Beaver Falls, Pa., on account of the death of his father, J. W. Johnston, on Sept. 26.

* * *

ATLANTA, GA., Oct. 4.—Cheney & Blackmon, of Columbus, Ga., have started construction of a handsome drive-in filling station here, reports L. C. Trapp, district sales representative of Empire Refineries, Inc. of Tulsa.

* * *

MUSKEGON, MICH., Oct. 5.—The Muskegon Co-Operative Oil Co. has just completed construction of a new service station and erection of two 15,000-gallon tanks which gives it storage for 75,000 gallons. F. A. Young is manager.

* * *

NEW YORK, Oct. 4.—George E. Drucquer has been appointed manager of the New York division of the Transcontinental Oil Co., Pittsburgh, succeeding H. J. Scott who resigned. The New York offices are at 576 Fifth avenue.

* * *

NEW YORK, Oct. 4.—The J. S. Gill Petroleum Co., located at 24 Stone st., New York, has been appointed distributor of Quaker State oils and greases manufactured by Phinny Bros. Co. of Oil City, Pa., according to J. S. Gill.

* * *

NEW HAVEN, CONN., Oct. 4.—Morris Gordon, president of Paramount Petroleum Products Co., Inc., says that his company has in process of construction a drive-in service station on Hallock st., this city.

* * *

LOUISVILLE, KY., Oct. 4.—Hughes & Co., which operated the old Kentucky Refining Co. at Lexington, have shutdown the plant and moved their Lexington manager back to the Chicago offices, reports Berry V. Stoll of the Stoll Oil Refining Co.

* * *

GRAND RAPIDS, MICH., Oct. 4.—F. S. Grimes, of Grimes & Madigan, jobbers, announces his company has under construction its fourth service station in the city, which will be equipped with visible dispensers operated by air. The station will open about Oct. 20.

* * *

JULESBURG, COLO., Oct. 4.—Harry J. Robison, owner of the Robison Oil Co., who has been acting as agent for The Texas Co., reports that he is not buying gasoline and kerosene on the open market for three stations located at Julesburg, Big Springs and Brule, Neb.

* * *

COLUMBUS, IND., Oct. 4.—The Tri-Point Oil Co. is installing storage at North Madison, Ind., to handle gasoline and kerosene. Lubricants will also be sold. The company will be open for business as a jobber about Nov. 1, according to E. C. Storm, proprietor.

* * *

SOUTH HAVEN, MICH., Oct. 4.—Wolverine Service Stations has recently opened a station at Dowagiac which is getting its share of business, according to A. D. Dubinson, general manager. Mr. Dubinson also reports that business in his territory is very good and that there is an extremely good fruit crop in western Michigan.

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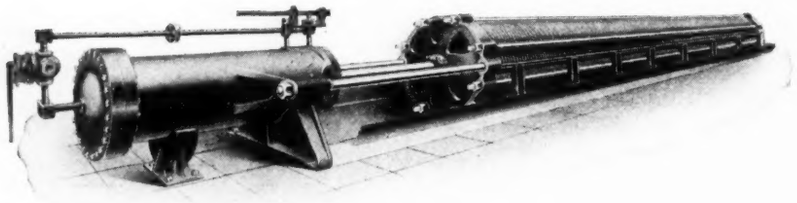
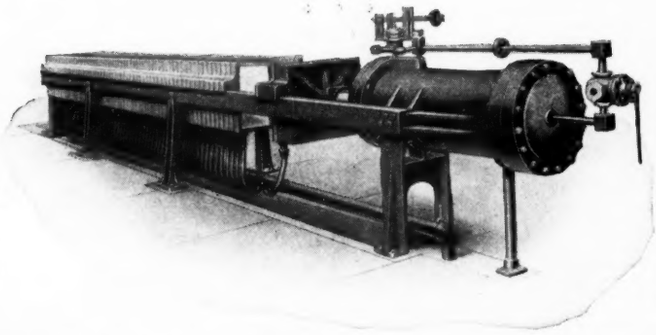
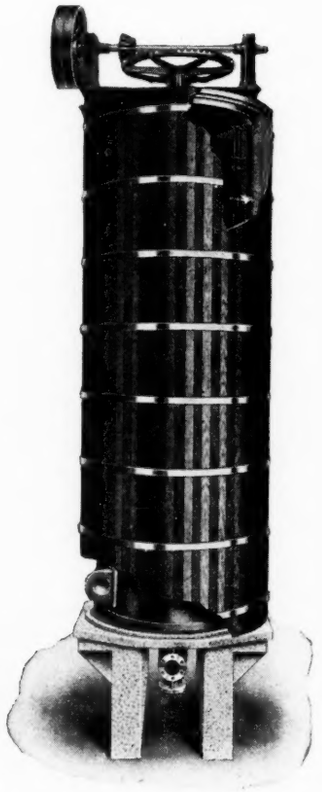
Wax Testing Presses
Scale Wax Cooling Drums
Paraffine Wax Sweater Plants
Wax Distillate Chilling Machines, etc.
Steam Engines
Refrigerating Plants
Pumping Machinery





Above: Bethlehem (Moore) 48-in. Hydraulic Filter Press.

At right: Bethlehem (Moore) Wax Moulding Press with open gutter.



Bethlehem (Moore) Single Unit Type Distillate Chilling Machine.

BETHLEHEM
MOORE WAX PLANT EQUIPMENT

Here Are Answers To Questions Published August 15, Do You Agree With Them?

CLEVELAND, Oct. 4.

HOW many different crude oils do we find in the United States? Name them.

Answer.—The three general grades are asphalt base, paraffin base and mixed base, that is combined paraffin and asphalt base.

Why is Pennsylvania crude considered the best from which to manufacture lubricating oils?

Answer.—The chief talking points made by the advocates of Pennsylvania oil as to its superiority are its paraffin base and the fact that it has a high fire test. That is, it is claimed it is more durable because it will stand the high operating temperature of an automobile engine longer without breaking down. Also that it is more "oily" than other lubricants.

Of what is crude oil composed?

Answer.—Chiefly of hydrogen and carbon with various percentages of sulphur compounds, water and other impurities in some cases. The products of crude oil are gasoline, kerosene, gas oil, lubricating oils, paraffin wax and (or) coke.

What is the purpose of refining?

Answer—To separate the crude into its various fractions and make of each a commercial product. It might be said that the chief purpose of refining broadly speaking, today, is to convert the greatest possible amount of the crude into commercial motor fuel.

What is viscosity?

Answer.—Viscosity is the cohesiveness of an oil, that is the tendency of the molecules to stick together.

What does flash mean to lubrication?

Answer—It is hard to say what is the direct bearing of flashpoint on lubrication. However, a high flashpoint would be an indication of the ability of the oil to resist heat and therefore, other things being equal, would argue that the oil would wear well under the operating heat of a motor.

What is fire test?

Answer.—Fire test is the method of determining the temperature at which an oil will take fire and burn steadily when a flame is passed slowly over its surface. This temperature is also sometimes called the fire test.

What is pour test?

Answer.—Pour test is the method of determining the lowest temperature at which an oil will remain liquid enough to pour. This temperature is also sometimes called the pour test or pour point.

Does cold test have any meaning to the buyer?

Answer.—That depends upon the buyer's knowledge of oil. Theoretically, it should indicate to him whether a certain oil is desirable for use in cold weather, the theory being that a low cold test oil, one which will remain fluid at a very cold temperature will start its work of lubrication more promptly with the starting of the engine in cold weather than one with a higher cold test. It also indicates whether the paraffin wax has been completely removed from the oil.

What does color mean to an oil's lubricating qualities?

Answer.—This is a good question to start a heated debate most anywhere in the oil business. Good clear color is at least a good selling point because it looks pretty and inviting. Also it indicates careful filtering and by inference that the oil has been carefully refined and handled throughout, whereas poor color may indicate the presence of impurities.

Should we talk viscosity, flash and fire to a customer?

Answer.—In general, it is inadvisable to talk these matters to the layman unless he seeks information about it. The customer usually knows little about oil and its properties, what it is and what it is not. All he cares is that he gets "good oil." If he is assured of that, and confidence in the company or the station manager will tend to assure him of that, talk about the technical details will only bore him. However, the salesman should be equipped to give the customer information accurately and intelligently on these points if the customer shows interest.

Where is emulsion test important in auto lubrication?

Answer.—Emulsion test is not nearly so important in automobile lubrication as it is in work where the oil comes in contact with water or moisture such as steam. The view is held by some oil men that an oil that separates well from water will probably deposit less carbon than an emulsifying oil.

What are the most important tests used in judging lubricating qualities?

Answer.—Viscosity, flash, fire, cold test, emulsion test, probably.

How is cup grease made?

Answer.—Cup grease is made from the combination of a metallic soap, usually lime with mineral oil by heat and agitation.

Should cup grease ever be used in transmission or driving axle? Why?

Answer.—No, because it lacks adhesiveness. That is, the gear teeth working through the grease would simply cut it and the grease would stay that way (channel) instead of clinging to the teeth and maintaining a film between them.

Of what is graphite grease composed? Give complete details.

Answer.—John Rome Battles in his book, "Industrial Oil Engineering," says:

"A soft, unctuous, almost pure graphite was discovered by Doctor Acheson among the products of the electric furnace. He further discovered a method of treating this graphite with a vegetable extract and diluted it with water. It then acquired the property of remaining suspended in the water. The deflocculated graphite thus produced, after being allowed to remain in suspension in the water for a definite time, is filtered through a canvas filter that is impregnated with rubber films under pressure. The

A LIST of questions prepared by the Cities Service Oil Co. of Ohio to test the attention and thinking capacity of its salesmen was published on page 35 of the Aug. 15 issue of **National Petroleum News.**

Since that time we have received a large number of letters asking that the answers to these questions be printed. Herewith the list of questions is reprinted, together with the answers thereto. These are not answers prepared by the Cities Service Oil Co.

It is realized that the answers given in some cases are debatable, some experts holding one theory and others an opposite view, but an attempt has been made to give fair answers to such questions.

It is also realized that the answers herewith printed contain nothing that is not already well known to the technical men of the industry and many of the practical men as well, but it is hoped that they well be enlightening to some members of the industry. —Editor.

MILWAUKEE

Will Demonstrate at the Conventions

The Reason For The Unprecedented World Wide Demand For

Milwaukee Filling Station Outfits, Pumps, Oil Storage Systems, Compressors

Tulsa—
October 8th to 14th.
Booth D-4

Milwaukee—
Oct. 23rd-24th-25th
Booth 40

A Cordial Invitation Is Extended to Visit Our Big Daylight Plant

MILWAUKEE TANK WORKS
MILWAUKEE, U.S.A.
MILWAUKEE
MANUFACTURERS OF OIL PUMPS AND TANKS

BRANCH OFFICES:

New York	Boston	Cleveland
Pittsburgh	Detroit	Atlanta
Dallas		Minneapolis
San Francisco		Chicago
Paris	London	Rotterdam

water is thus slowly separated and a paste composed of deflocculated graphite and water is then obtained. This was given a trade name. Another product is obtained by working this paste with a lubricating oil, the water being graduatlly eliminated. The latter product is used for lubrication and the former has been used in connection with thread cutting, boring and reaming, also in air compressors, etc."

Graphite also is sometimes added to cup grease. Authorities differ on its value.

How are semi-fluid oils manufactured?

Answer.—In general, by saponifying a fat with milk of lime and adding mineral oil to obtain the consistency desired.

Of what is mica grease composed?

Answer.—It is a cup grease with mica added.

How is fibre grease made?

Answer.—Fibre grease is usually made in a fire kettle rather than a steam kettle and soda soap is usually the base. When the soap is melted, usually with the addition of a little mineral oil to soften it, mineral oil is added very slowly. The grease is cooled slowly and agitated while cooling.

Tell what you know about transmission compound.

Answer. — Good transmission compound has a base of fibre grease reduced to the desired consistency by the addition of heavy mineral oil, usually cylinder stock.

What would you use to lubricate a wire cable?

Answer.—John Rome Battle gives the following as a formula for a good wire rope coating: 25 per cent summer black oil; 6 per cent kidney resin oil: 69 per cent Mexican reduced distillate (11B). A residuum of 500 to 1000 seconds Saybolt viscosity at 210 F. is usually used. It is applied hot.

How is axle grease manufactured?

Answer.—Axle grease is a cold-set grease, usually made in the barrel or other container in which it is to be shipped. Resin oil is added to a mixture of mineral oil and slaked lime, to give it a "set". This grease is very cheap and is unsuitable for use on any other than rough iron bearings.

How many different kinds of gasoline are there on the market? Name them.

Answer.—Three general classes; straight run, cracked and blended.

What is the I. B. P. of gasoline?

Answer.—The initial boiling point or the temperature at which the first drop distills from the flask in a distillation test.

What is the E. P. of gasoline?

Answer.—The end point is the maximum temperature of the vapor in a distillation flask after the liquid has all been vaporized. The 90 or 95 per cent point is usually considered just as important.

What bearing has I. B. P. on gasoline?

Answer.—The lower the I. B. P. the easier to start the motor, provided that the remainder of the distillation test is within usually accepted limits.

What bearing has E. P. on gasoline?

Answer.—The lower the end point the more completely the fuel is burned up and the less danger of crank case dilution and formation of carbon.

What are new Navy specifications? Why called new Navy?

Answer. — New Navy specifications are those set by the navy department to cover gasoline bought for use of the government departments. The initial prescribed is 140 and the end point 437. They are called new Navy specifications because the specifications were revised about two years ago to specify 437 instead of 428 for the end point.

What is benzol?

Answer.—Benzol is a hydrocarbon of the aromatic series obtained from the distillation of coal.

What is casinghead and how is it used?

Answer.—Casinghead is a highly volatile gasoline obtained from natural gas by the compression or absorption method. It is used to improve the chain of boiling points of heavier gasolines and naphthas by blending.

What is cracked gas?

Answer.—Cracked gasoline is a product made by distilling the heavier fractions of petroleum, such as gas oil and fuel oil and sometimes kerosene under high heat and pressure to convert the heavier fractions into gasoline.

Does gravity mean anything in the sale of gasoline? If not, why not?

Answer.—Here is another chance to start a fight. There is no general agreement in the industry on this point. However, probably more oil men will be found who hold that gravity in itself has nothing to do with the value of gasoline, than will be found holding the opposite view. The anti-gravity experts believe that the chain of boiling points of the gasoline is the only measure of its quality. Sometimes a gasoline of low gravity will have a satisfactory distillation range and sometimes a high gravity gasoline will not. In connection with the sale of gasoline however, high gravity is a good talking point with the general public.

What is an internal explosion engine?

Answer—One which is operated by the firing by a spark of an explosive mixture of gas and air, as an automobile engine.

What is an internal combustion engine?

Answer.—One in which the charge in the cylinder is exploded without a spark due to the heat generated by its compression, as the Diesel engine.

How many different lubricating systems have we? Name them and designate the three most important systems.

Answer.—Three general classes. Forced feed systems, splash sys-

(Concluded on page 63)

Here Are Answers

(Continued from page 60)

tems and various combinations of the two.

Does a power plant operating on an efficiency basis have a reclaiming filter?

Answer.—Yes.

What lubricant would you recommend for transmission gears? How full should the transmission housing be filled? Where would you use grease cups on a transmission gear?

Answer.—Transmission lubricant. About half full, or up to the level of the filling opening. Nowhere.

Why is a tractor harder to lubricate than an automobile?

Answer.—Because it is a heavy duty engine and runs hotter than an automobile engine, especially when operated on kerosene. Also the dust encountered by a tractor is much more than that in which an automobile operates.

How is dust prevented from entering the motor cylinders of a tractor? Name three systems.

Answer.—Screens on breather pipes and filters through which the oil pump draws oil from the sump to be fed to the bearings.

In selling to the farm trade should we try to sell castor machine oil and if not, why not? How do we treat naphtha distillates?

Answer.—There is some difference of opinion on this. It is pretty generally held that castor machine oil, because of its superior adhesiveness, is particularly adapted to lubrication of farm machinery because of the loose bearings on such equipment from which a straight mineral lubricant is likely to be squeezed out. Naptha distillates are treated with sulphuric acid and caustic soda.

What kind of oil is recommended for cream separators?

Answer.—A light neutral.

How is lubricating oil filtered and why?

Answer.—Through Fuller's earth usually, sometimes through bone-black. The purpose of filtering is to remove impurities and control and clarify color.

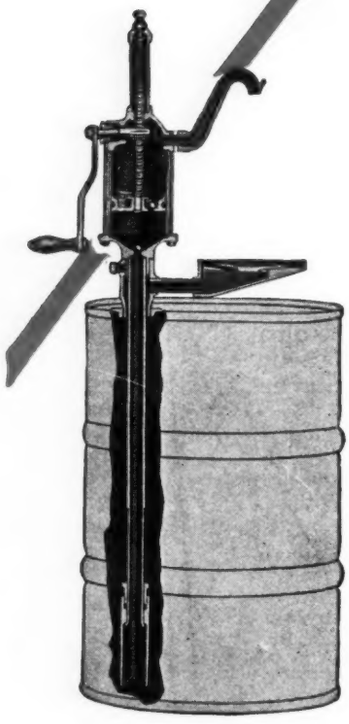
Why do we compound oils? Why do we blend oils?

Answer.—Oils are compounded to obtain the superior oiliness and adhesiveness which comes from adding fatty oils to mineral oils. Oils are blended to bring them to desired viscosity.

WASHINGTON, Oct. 4.—The production of crude oil in France, never a factor of weight in the world's supply, in the second quarter of the year, decreased one half, to 58,000 barrels. That information was sent by cable to the department of commerce by Assistant Commercial Attache J. F. Butler, stationed at Paris. He made no explanation for the heavy falling off, contenting himself with a mere dispatch of the central fact.

A Producer In the Oil Field
PALM FECHTELER
Decalcomanie Transfers
Are now being used universally by Oil Refiners and Distributors to identify their brands.
Their widespread use on pumps, garages, dealers' windows, trucks, tanks and tank cars has proven a productive source for steadily increasing sales—due to invaluable, continuous advertising that costs nothing after the first small initial expense.
The same Decalcomanie Transfer that acts as a sign on trucks, tanks etc., also becomes an attractive and permanent advertisement, in brilliant colors, on the dealer's window and wall spaces.
Send for actual Decalcomanie samples to try—also, for illustrated literature and details of non-obligating free sketch offer.
PALM, FECHTELER & COMPANY
Decalcomanie Pioneers
67 Fifth Ave. New York City
5 So. Wabash Ave. Chicago, Ill.
Representatives in All Principal Cities
GASOLINE TEXACO MOTOR OIL

WHY MARVEL PUMPS FOR OIL AND GREASE



Automatic adjustable intake pipe —will fit any length of barrel

REASON NO. 9

Advertising Value

Marvel Barrel Pumps give you bill board selling punch without cost.

Painted gratis in your trade colors, they have an advertising value that's unmistakably rewarded by increased sales of oil or grease.

Would you like to know exactly what they have done? Consult a Marvel salesman and his "Book of Facts".

NINE
OTHER REASONS

1 SALES VALUE
2 MANUFACTURING POLICY
3 LARGE PRODUCTION
4 MECHANICAL SUPERIORITY
5 MORE FEATURES
6 ADAPTABILITY
7 LOWER EQUIPMENT COSTS
8 DEALER DEMAND
9 SALES HELPS

THE MARVEL EQUIPMENT COMPANY
CLEVELAND, OHIO

Canadian Factory:
MARVEL EQUIPMENT COMPANY, LTD.
Belleville, Ont.

Manufacturers of Oil, Grease and Gasoline handling equipment. Direct representation and warehouse stocks in principal cities.

Bills Affecting Oil

Bills affecting the oil industry as introduced into the various state legislatures, are summarized from the legislative letters of the American Petroleum Institute:

Alabama

Senate Bill 372 amends measure imposing excise tax on gasoline.

Senate Bill 402 would give counties authority to impose a 1-cent tax on gasoline.

Senate Bill 450 would legalize sale of gasoline on Sundays.

Senate Bill 459 regulates standards of motor fuel.

Senate Bill 464 provides for 3 per cent severance tax on extracting natural resources.

Senate Bil 1487 regulates oil pipe lines and sale of crude oil and petroleum products.

Senate Bill 488 regulates gas pipe lines.

Senate Bill 489 provides for establishment of oil and gas department under jurisdiction and supervision of Public Service Commission.

House Bill 741 provides for levying of excise tax on gasoline and other motor fuels and for holding of elections in counties to determine the tax.

House Bill 809 provides for a 3-cent tax on gasoline.

House Bill 867 provides for the levying and collection of a license or privilege tax upon each person severing natural resources from the soil.

Arkansas

Senate Bill 1 regulates motor vehicles and the sale of gasoline and oil

House Bill 27 is identical.

Georgia

House Bill 510 is a general tax measure.

Giving Credit Where Credit Is Due

Editor,
National Petroleum News,
Cleveland, Ohio.

Dear Sir:

In a recent issue of a London oil journal there appeared an account, by a Mr. Convers, of the remarkable record made by the Cia. Petrolera Ibero-Americana (Interocean interests) in drilling their wildcat No. 1 well to a depth of 4525 feet in 90 days. perhaps a world's record and certainly a most creditable achievement, considering that the work was done in a mountainous region of northern Spain where neither well logs nor definite geological data were available.

Unfortunately no reference was made to the drillers "guilty" of this performance nor to the origion of the machinery and tools used. The drilling superintendent was Thomas Bannon, of California, and the drillers were James McGranahan and Clifford Ross, of Pennsylvania. The machinery cordage and tools used were furnished by the Oil Well Supply Co., of Pittsburgh.

Very truly yours,
W. W. H.

PRODUCTION SECTION

Col. Walters To Officiate At Navajo Lease Sale

SANTA FE, N. M., Oct. 10

COL E. WALTERS, of Skedee, Okla., has been appointed auctioneer by former Gov. Herbert J. Hagerman, United States Commissioner to the Navajo tribe, to conduct the auction of oil and gas leases on the Navajo Indian reservation in northwestern New Mexico to be held at the Federal building here Monday, Oct. 15.

Col. Walters is well known to every oil man who ever attended an Osage lease sale at Pawhuska, Okla.

The auction is to be held in the federal district court room on the second floor of the two-story rock building, built in the architecture of an earlier day, which stands at the north end of Lincoln avenue with a memorial shaft to Kit Carson, New Mexico pioneer and hero, immediately in front of it. Here many a chapter in New Mexico history has been enacted, and that now scheduled for Oct. 15 is expected to prove one of the most momentous in the development of the state; for, to the oil man, New Mexico is still practically a wildcat state.

The auction is set for 10 a.m.

The leases to be sold are divided into two groups.

The first includes one on the Tocito structure, 4000 acres; one on the Table Mesa, 3200 acres; one on the Rattlesnake 4080 acres; one on the Beautiful mountain, 4800 acres.

The second includes 18 tracts of not to exceed 640 acres each on the Hogback structure adjacent to the area already leased to the Midwest Refining Co., whose two wells producing oil of a high quality, first called widespread attention to the oil possibilities of the Navajo country.

These are described as follows:

1. S 24 T 30 north R 17 west.
2. S 20 T 30 north R 16 west.
3. S 26 T 30 north R 17 west.
4. S 30 T 20 north R 16 west.
5. S 36 T 30 north R 17 west.
6. S 32 T 30 north R 16 west.
7. S 2 T 29 north R 17 west
8. S 6 T 29 north R 16 west.
9. S 10 T 29 north R 16 west.
10. S 12, north half and west half of SW quarter T 29 north R 17 west.
11. S 8 T 29 north R 16 west.
12. S 16, T 29 north R 17 west.
13. S 14, west half, and west half east half and west half east half, T 29 north R 17 west.
14. S 22 T 29 north R 17 west.
15. S 26, east half; and west half S 25, T 29 north R 17 west.
16. S 20, southeast quarter, S 29, east half and southeast quarter of northwest quarter; east half southwest quarter and east half and southwest quarter of southwest quarter T 29 north R 16 west.
17. S 34, east half S 35 west half, T 20 north R 17 west.
18. S 35, east half, T 29 north R 17 west; S 31, southwest quarter and south half northwest quarter, T 29 north R 16 west.

On group 1 leases a flat cash royalty of 12½ per cent is to be charged in addition to a bonus.

On each of the group 1 leases two wells are required. The first is to be sunk at or near the apex of the dome at a point to be agreed upon by the "officer in charge or the secretary of the interior" and the lessee; to be drilled with an approved standard rig to a minimum depth of 3000 feet unless oil or gas is found in paying quantities at a lesser depth. In that case the lessee is to drill a second well to test any sands below the depth of those encountered in the first and to a minimum depth of 3000 feet unless the secretary of the interior grants permission to cease operations at a lesser depth. The second well also is to be at or near the apex of the dome. If oil or gas is discovered in paying quantities in one or both of these wells, the lessee is required to drill a third approximately 200 feet below the apex of the dome.

On the Group 2 leases a graduated royalty of from 12½ to 25 per cent is to be charged in addition to a bonus.

On each of these at least one well must be drilled to a depth of 2500 feet unless oil or gas is encountered in paying quantities at a lesser depth and within a year from the date of approval of the lease. If this is non-productive the lessee is required within the next succeeding year to put down a second well to the same depth unless oil or gas is found in paying quantities before this depth is reached.

Charles H. Burke, commissioner of Indian affairs, will be here for the auction.

Salt Creek Is Growing

CASPER, Oct. 5.—The new town of Salt Creek, located on the banks of Castle Creek along the right of way of the North & South railroad, is having a rapid growth. Approximately 200 business and residence lots had been sold in the new town site up to Oct. 1. So far the following industries have been located in the new town: Three filling stations, two garages, two banks, two groceries, two rooming houses, one hotel with 60 rooms, two clothing stores, one hospital, two butcher shops and one newspaper. The lots are 25 x 140 feet. The streets are 60 feet in width except Fourth and Seventh which are 80 feet and Main street which is 90 feet. A box car style of building is being used for depot and town site offices. Grading is in progress on the industrial side track which is expected will be completed next week. Recent heavy rains and high water delayed train service only a short time on the new road.

Prairie Shipments Fall In September

Staff Special

TULSA, Oct. 2.—Shipments of the Prairie Pipe Line Co. during September were smaller by 662,235 barrels than during August, an average decrease of 18,271 barrels daily during the month. In September, the company shipped 2,874,693 barrels, an average of 95,823 barrels daily, as compared with 3,536,928 barrels during August, which was a daily average of 114,094 barrels.

These figures include pipe line runs from Oklahoma, Kansas and north Texas, and also include tender, or common carrier, shipments of other companies through Prairie's lines. These tender shipments have been of considerable volume during the proration period, some of the larger producing companies having used this means of getting their oil to their eastern connections in the absence of a market for it in the Mid-Continent.

Shipments and daily averages of the Prairie Pipe Line Co. during the past six months have been as follows:

Month	Shipments	Daily Average
April	5,067,247	168,908
May	4,872,747	157,185
June	4,767,868	158,762
July	4,469,311	144,171
August	3,536,928	114,094
September	2,874,693	95,823

Powell Field Declines By 6,000 Barrels

FORT WORTH, Oct. 6.—Registering a daily loss of 6000 barrels in production, the Powell field this past week was down to 160,000 barrels despite 45,000 barrels new production added during the week.

There were a total of 30 wells completed, about an average number, but the new production was considerably less than average, this circumstance giving further ground to the belief that the crest has been reached in the present Powell area.

None of the new wells was of any particular importance, either in size or extension of territory.

SHAMROCK, TEX., Oct. 6.—Roy W. Schenck who brought in a gas well a short distance north of the town of Shamrock in September, has been awarded a natural gas franchise for the town. The rate agreed upon is 75 cents per thousand, this to be reduced to 60 cents when 400 connections are made.

Among The Producers In Various Fields

CASPER, Oct. 5

WORD has been received in Casper of the death of W. G. Ryan at his home in Detroit after a short illness from pneumonia. He was about 48 years of age. He was associated with R. L. Pattison of Buffalo and Chatham, Ont., in the oil and gas business and was in Casper about 6 months ago having negotiated for the acreage at Allen Lake near Medicine Bow where the Laramie Syndicate is drilling a well.

* * *

CASPER, Oct. 4.—R. E. Wertz, vice president in charge of lands and leases for the Producers & Refiners Corp., has leased the home of Congressman C. E. Winter, 514 East Milton street, and will continue to make Casper his home. It was reported some time ago that since Mr. Wertz's elevation to a vice presidency in the company that his headquarters would be in Chicago.

* * *

TULSA, Oct. 5.—Sidney Powers, chief geologist for the Amerada Petroleum Co., has returned to Tulsa after two weeks' absence in California, where he attended the meeting of the American Association of Petroleum Geologists.

* * *

CASPER, Oct. 4.—The Doyle brothers, Chris and Jack, have left for Craig, Colo., driving overland in an automobile. Until recently both brothers have been connected with the Alaska Development Co. in its operations on Pine Mountain.

* * *

BARTLESVILLE, Oct. 5.—Work is completed moving the 16-inch line between Colony and Welda, from the main highway to a private right of way. This work necessitated the lowering of rail crossing. This line is now in service.

* * *

TULSA, Oct. 6.—W. B. Wilson, chief geologist of the Gypsy Oil Co., is in New Mexico, examining the domes to be offered at aucton at the government sale, Oct. 15.

* * *

BARTLESVILLE, Oct. 4—The Empire companies topped the sand at 1628 feet with its L. A. Wilson No. 1 in Archer county, Tex., and is setting pipe preparatory to drilling in.

* * *

CASPER, Oct. 5.—E. D. McCally, district manager for the Rocky Mountain region for the Parkersburg Rig & Reel Co., and W. T. Hazel, general sales manager for the same company, returned last week from an extended trip through the oil fields in Montana. Mr. McCally left Sunday for Tulsa to attend the sessions of the International petroleum congress.

* * *

BARTLESVILLE, Oct. 5.—A new gas pipeline is projected by the Empire which will run 13 miles southeast from Drumright compressor station to a point south of the town of Bristow. This line is to be eight and 10-inch plain end pipe and will tap a new gas field in sec. 30-17-9 which has been developed in this section. The new line will feed into the Cushing main line. Right of way for the project is now being procured.

* * *

CASPER, Oct. 4.—C. Dwight Avery, E. M., of the land classification branch, U. S. Geological survey, Washington, was in Casper this week having been making investigations for his department in Montana and Wyomig. Mr. Avery has left for Denver where he will spend several days in the local offices of the U. S. Bureau of Mines.

* * *

BARTLESVILLE, Oct. 4—The Empire companies have started drilling on the Sweatman farm in the Corsicana-Powell area in Texas. The test is extremely to the southwest of the main field and on the direct trend where the Empire companies' acreage lies. The test is about 1500 feet southwest of the Gulf company's Barron well brought in at the latter part of last week.

* * *

CASPER, Oct. 4.—Rush D. Graham, of Shreveport, La., one of the best known rotary drilling contractors in the Louisiana fields and south Texas, is erecting an Imperial rig at the Salt Creek field, this being his first appearance in this territory. Mr. Graham brings a crew of 10 men with him from the south.

* * *

CASPER, Oct. 5.—A. M. Sellery of the Ohio Oil Co. spent a few days in Casper the past week having been looking over conditions in some of the new fields in Colorado and southern Wyoming. Mr. Sellery has been looking after lands and leases for the Ohio Oil Co. at Shelby, Mont., for the past year or more.

* * *

TULSA, Oct. 5.—R. J. Berry, president of the Mid-Kansas Oil & Gas Co., and E. D. Redpath, assistant secretary of the Ohio Oil Co., are here from Findlay, O., in connection with the acquisition of the Waite Phillips properties.

* * *

DALLAS, Oct. 6.—F. W. DeWolfe, formerly chief geologist for the Humphreys Pure Oil Co., is now occupying a similar position with the Boyd Oil Co., another of the Humphreys companies. His headquarters will be in this city.

* * *

BARTLESVILLE, Oct. 5—The Empire is making preparations for a test of its acreage in Sequoyah county, Oklahoma. This company has a location in the center of the southeast of the northeast of 20-13-21.

* * *

CASPER, Oct. 5.—Capt. M. J. Hopkins and wife have left by auto for the Pacific coast where they will spend the winter. Capt. Hopkins is well known to the oil fraternity having been employed by a number of the more important companies as consulting geologist and also having located and mapped a number of structures independently in Wyoming. Through the deaths recently of his grandfather, and uncle and a brother, he is left with a comfortable competency and for the next several months will probably spend considerable time in hunting and fishing in Washington and Oregon.

* * *

WICHITA FALLS, Oct. 6.—Supervision of oil operations in northwest Texas and the Panhandle will be handled directly by the Wichita Falls office, a new district with headquarters at this place having been created this week. T. L. Coolin, district deputy supervisor, will be in charge. There are 49 counties in the district, which embraces all of north and northwest Texas.

* * *

BARTLESVILLE, Oct. 5.—On the Kansas City 16-inch line between Colony and Garnett general repair work is being done. The work will put this line in excellent condition to transport gas to Kansas City for the fall and winter season.

* * *

TULSA, Oct. 5.—Theron Wasson, chief geologist for the Pure Oil Co., has been spending some time in Mexia recently, looking over properties recently acquired from the Humphreys Pure Oil Co. in that field.

* * *

CASPER, Oct. 5.—E. C. Skinner, general purchasing agent for the Producers & Refiners Corp., is spending some time at the Casper offices of the company.

* * *

BARTLESVILLE, Oct. 5.—T. E. Swigart, in charge of the U. S. Bureau of Mines here, will leave Monday on a trip to Europe, where he will engage in private work during a leave of absence from the bureau.

* * *

CASPER, Oct. 4.—H. C. Bretschneider, general manager of the Western States Oil & Land Co. returned to his home in Denver after a few days spent at the company's Casper office.

* * *

TULSA, Oct. 6.—Arthur F. Truex, formerly division geologist for the Humphreys Pure Oil Co. here, has resigned, and is now Tulsa representative for the Newblock Oil Co.

* * *

CASPER, Oct. 5.—B. A. Thompson, of Denver, assistant traffic manager for the Midwest Refining Co. has been in Casper for a few days.

* * *

SHREVEPORT, Oct. 11.—C. M. Leonard, chairman of the board of directors of the Invincible Oil Corp., is on a trip through Louisiana and Texas inspecting the properties of his company.

Tulsa Exposition Center Of Interest; Drilling And Production Off

By A. F. Hinton
STAFF REPRESENTATIVE

OPERATIONS throughout Oklahoma are continuing at the low ebb which has characterized them for the past 60 days, and, with the exception of one or two fields which are active, the state as a whole is experiencing one of the most complete shutdowns in its history. Production, as a consequence, has been declining rapidly, and has continued this downward movement during the week just closed. Since proration went into effect, the state's production has fallen off nearly 130,000 barrels daily, with most of the decline due to lack of market for crude and an almost absolute cessation of drilling.

No General Increase In Takings

While opinion was generally expressed at the time of the cut in crude by the Prairie Oil & Gas Co., that that step marked the beginning of the end of proration, and that the Prairie soon would begin taking more oil from producers, there has been no definite indication yet that those holding this view had the correct slant on the situation. There have been a few minor instances where the Prairie has run more oil since the cut than it did before, but this was in line with the company's announcement that it proposed to increase its runs from small, settled production properties as much as possible. It announced at the same time that no general lifting of proration was contemplated at that time, and apparently there has been none.

Crude Bootlegging Is On Wane

The crude cut has had the effect of stabilizing the crude market considerably, and has rendered much less general the practice of selling oil at bootleg prices. The new prices brought crude down to about the level at which refiners had been buying it, in most cases, and found them more willing, therefore to accept the Prairie prices as the market. Considerable crude still may be bought, and is being bought, at prices below those of the Prairie, but most of this practice is confined to fields making flush production of low-gravity oils, such as the Bristow district. Producers have shown a tendency to demand Prairie prices, and, as a general thing, when crude is sold below the market, it is a cash proposition, and accepted by the producer only as a means of relieving distress caused by his inability to dispose readily of his oil.

Eager For End Of Proration

Mid-Continent producers are looking forward eagerly to the day when the Prairie and other purchasers will begin again taking all the oil, for this will mean salvation for many of them, and appears at this time to be the only thing that can help them out of their present dilemma. It is generally believed that the next 60 days or so will see the arrival of that day. In the meantime, Oklahoma operators are making the best of a bad situation, with their customary optimism, and for the present, at least, have forgotten their troubles, and have been enthusiastically co-operating for the success of the International Petroleum Exposition and Congress, now just on the eve of opening its doors.

The grounds of the exposition have represented the well-known 'hive of industry' during the past week, and have presented a wonderful sight, even in the hurry and bustle of preparation It has been a regular picnic for the men engaged in the preparation of these exhibits, for they have been pursuing their customary work amid srange surroundings, and within easy kidding distance of others engaged in similar work. It is seldom, indeed, that so much, and so diversified, oil field work is carried on in so small a space, and it has been a novel experience for all engaged in it.

From the window of this office, it appears that a regular oil field has sprung up around Convention Hall, as there may been seen a number of derricks, together with various buildings, boilers, smokestacks, and other structures tyical of the oil fields. All offset requirements have been disregarded in the location of drilling wells on the exposition grounds, and a number of hot "line fights" will be in progress during the coming week. The engineers, as usual, have been blamed for it, as it is a well-known fact that whenever a drilling well strays too close to the lease line, it is because the surveyors put the stake in the wrong place. I knew of one case where a skinner knocked the location stake down and dragged it along for about 75 feet before he aroused from his lethargy long enough to get down and stick it back in the ground again. His final location was where the well was drilled, but the engineer got the blame for it.

Within the short space of half a block, three derricks are up, completely rigged, and stick it back in the ground again. His beween them are a number of boilers, several big compressors, various types of gas and oil engines, pumping powers and everything that goes to make up an active field. Further to the west, there is another active part of the field, where similar congestion exists. While this field may develop some large flush production, the wells are being drilled so close together that it will in all probability soon go into a precipitate decline; in fact, its period of greatest activity, it is believed will not extend longer than one week.

Current Production

Oklahoma's production, which has fallen from its mighty peak of 530,000 barrels since June 15, declined a further 9,586 barrels during the past week, and is now estimated at 404,430 barrels daily. Of this decline, Burbank and Bristow contributed 5700 barrels between them. Tonkawa surprised everybody by showing a small increase, 13 new wells having brought its output up from 55,650 barrels to 56,501 barrels. Other fields throughout the state generally declined.

The Kansas estimate indicates a small increase for that state during the past week, but it is an increase caused more by a more careful checking of figures at the end of the month than by any actual increase in production. Drilling is even more shut down in Kansas than in Oklahoma, and proration has affected its production just as seriously.

During September, Oklahoma's production averaged 432,017 barrels daily, as shown in the table given herewith. This compares with 467,062 barrels a day during August, and is a decline of 35,045 barrels in daily average during the past month. During July, the state averaged 512,724 barrels daily, a daily average during September, therefore, was 80,707 barrels less than during July, which is given as an indication of the effect of proration and poor marketing conditions upon the state's output.

Tonkawa led the way with a decline of about 17,000 barrels daily during the month averaging 69,945 barrels in September, as compared with 81,853 barrels during August. In July, this field's daily average was 99,442 barrels. Burbank's decline was much less precipitate during September than during August, although it was still considerable. This field averaged 103,530 barrels daily in September, as compared with 108,834 barrels daily

during August, thus falling off about 5500 barrels. Its July average was 119,509 barrels daily, or 11,000 barrels more than in August.

In northern Oklahoma, every field with the exception of Stroud and Wewoka showed declines during the month. Stroud is a newcomer in the table, and represents the well drilled by the Union Petroleum & Supply Co. near Stroud, some time ago. So far it is the only well in the field. Wewoka steadily gained in production during the month, averaging 11,140 barrels daily, as compared with 6000 barrels in August. At the close of September, the field was making about 20,000 barrels daily. The southern part of the state showed very little decline in September as compared with August, and some of the fields increased somewhat, notably Graham, which had several good wells during the month. Kansas averaged 76,000 barrels daily during September, as compared with 80,150 barrels in August, a decline of 4150 barrels. During July, Kansas' average was up to 83,550 barrels.

Estimated daily average production of the various fields in Oklahoma and Kansas during August and September is shown in the accompanying table:

Northern Oklahoma

Field	August	September
Allen	405	395
Bald Hill	4,900	4,400
Beggs District	13,060	11,845
Billings, Billings Extension	800	675
Bird Creek, Skiatook, Flat Rock	5,500	4,400
Bixby	725	900
Blackwell	2,325	2,225
Boynton	1,179	904
Broken Arrow	370	420
Burbank	108,834	103,530
Cleveland	5,850	4,640
Continental	28,950	27,500
Coweta	145	175
Cushing	27,380	26,350
Deer Creek	145	145
Depew	12,950	12,000
Garber	6,275	6,135
Glenn Pool	9,488	9,050
Henryetta	1,355	1,331
Jennings	3,130	3,105
Kelleyville-Bristow	2,955	2,613
Kinewood	1,790	1,640
Lyons	7,875	7,625
Mannford	238	230
Mervine-Newkirk	737	708
Morris	1,045	920
Mounds	829	716
Muskogee	350	325
Okemah	1,405	950
Osage, except Burbank	31,410	27,800
Ponca City	950	945
Slick	7,000	5,850
Stone Bluff	562	549
Stroud	....	420
Tiger Flats	6,110	5,960
Tonkawa	81,853	64,945
Washington & Nowata Counties	8,375	5,750
Watchorn	200	175
Wetumka	362	353
Wewoka	6,000	11,140
Yale-Ingalls	6,390	6,190
Sub-total	400,352	366,029

Southern Oklahoma

Brock	517	517
Cement	2,135	2,120
Comanche	975	880
Duncan	8,944	8,974
Fox	2,228	2,428
Graham	2,743	3,793
Healdton	16,738	16,250
Hewitt	23,025	20,525
Kilgore	280	215
Loco	2,950	3,000
Robberson	4,180	5,000
Sayre	750	1,046
Walters	1,245	1,240
Sub-total	66,710	65,988
Total Oklahoma	467,062	432,017
Decrease		35,045

Kansas

Augusta-Douglass	4,150	4,075
Cowley County	1,975	2,075
Eastern Butler County, Blankenship & Sallyards	3,300	2,750
Elbing-Peabody	9,600	8,650
Eldorado	18,450	18,350
Florence-Covert	3,825	3,525
Fox-Bush	6,800	6,450
Greenwood County	19,750	17,400
Leon & Weaver	1,700	1,625
Kansas, general	10,600	11,100
Total Kansas	80,150	76,000
Decrease		4,150
Total Mid-Continent	547,212	508,017
Decrease		39,195

Oklahoma and Kansas Estimated Daily Average Production

Oklahoma	Oct. 6	Sept. 29
Bristow	51,000	53,200
Burbank	95,909	99,416
Cushing	25,000	24,500
Healdton	16,500	16,750
Hewitt	21,000	22,500
Tonkawa	56,501	55,650
Osage, except Burbank	26,520	28,000
Oklahoma general	112,000	114,000
Total	404,430	414,016
Decrease		9,586

Kansas		
Augusta-Douglass	4,050	4,000
Blankenship Dist.	2,700	2,675
Elbing-Peabody	8,600	8,530
Eldorado	18,250	18,100
Florence Dist.	3,500	3,300
Fox-Bush	6,200	6,500
Greenwood County	17,100	17,000
Leon & Weaver	1,600	1,575
Kansas, general	13,000	12,700
Total	75,000	74,380
Increase		620

Wells Completed

Completions during the past week rose somewhat from the low level of last week, but still were very few in number

(Concluded on page 75, Col. 3)

Completions In Oklahoma And Kansas For Week Ended October 6, 1923

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Initial Production
Magnolia	2	NE NE 25-2S-3W	2057-2063	150

Creek County

Roxana Pet. Co	2	SW SE 8-15-8	2725-2907	756
Morgan et al	4	NW SW 36-17-11	2037-2057	15
Prairie O. & G. Co	2	6-16-9	2790-2813	No est.
Prairie O. & G. Co	2	31-17-9	T.D.638	Dry
Transcontinental	4	SWc 27-16-9	T.D.2925	Dry
Hartman et al	2	NE 9-16-10	T.D.3075	Dry
Eastern Oil Co	1	SWc 11-15-7	T.D.4035	Dry
Carter Oil Co	1	SEc 6-15-8	T.D.3864	Dry
Billingslea et al	5	NEc SW 27-14-8	T.D.2633	Dry
Witten & Kennedy	1	NEc SW 9-14-9	T.D.3190	Dry
Smith Oil Corp	1	NWc 4-18-10	T.D.2798	Dry

Garvin County

Magnolia	2	NW SE 16-1N-3W	1582-1602	120
Magnolia	8	NW NW 16-1N-3W	T.D.1990	Dry

Hughes County

Producers & Ref. Corp	1	NW NE 14-7-8	T.D.1118	Dry

Kay County

Grand Island Oil Co	1	SW NW 15-28-1W	T.D.2505	Dry
Comar Oil Co	4-C	NW SE 34-25-1W	2427-2525	98
Blackwell O. & G. Co	3-B	SE NE 34-25-1W	2170-2177	100
Comar Oil Co	3-B	NW NW 34-25-1W	2510-2538	46
Comar Oil Co	18	NE NW 34-25-1W	2477-2535	475
Comar Oil Co	20	CNL NW 34-25-1W	2488-2534	178

Marshall County

Bilbe et al	1	NWc 1-6S-6E	T.D.1568	Dry

Noble County

Comar	9-B	SW SW 2-24-1W	2102-2120	90
Comar	10-A	SE SW 2-24-1W	2544-2605	84
Comar	13-B	NW SW 2-24-1W	2219-2220	15
Comar	18	W½ SW 2-24-1W	2550-2580	130
Comar	15-B	NE NE 3-24-1W	1857-1892	155
Comar	12-A	NW SE 3-24-1W	2101-2119	98
Comar	15	NE NE 3-24-1W	2594-2603	183
Comar	15-A	NE SE 3-24-1W	2082-2098	150
Gypsy	14	SEc NE 10-24-1W	2631-2636	180
Gypsy	21	NE NE 10-24-1W	2120-2125	85

Okmulgee County

Stewart & McCullough	1	SE NW 13-16-13	T.D.1900	Dry
Vierson & Wallace	3	SW SE 16-13-13	T.D.2836	Dry
King et al	2	NE NW 23-13-13	T.D.2775	Dry
Butler Bros	5	SE NE 33-12-12	1440-1494	250
Moffitt & Slick	6	CSE 6-11-12	2388-2400	200
H. E. Jones	3	NE NE 25-15-14	T.D.1575	Dry
D. C. Richardson	8	SW NE 31-15-14	T.D.2287	Dry
Fee Oil Co	2	NWc NE 35-15-12	T.D.2260	Dry

Okfuskee County

H. F. Wilcox	1	NE SW 26-13-9	T.D.2775	Dry
Fisher et al	1	SW SW 28-10-11	T.D.3245	Dry

Osage County

Owen-Osage	252	SWc NW 22-23-11	1633-1650	4M
Mutual Oil Co	15	SE NE 32-24-8	1951-1958	140
Owen Osage	250	SE NE 34-24-11	1724-1740	2M
F. B. Lawson	3	SW NW 28-25-8	1076-1096	200
Ind. Terr. I. O. Co	308	NE NW 34-25-8	2034-2055	10M

Osage County—Burbank

Comar Oil Co	7	NWc NE 2-26-5	2916-2957	97
Prod. & Ref. Corp	12	SW NE 16-26-6	2915-2946	100
Skelly Oil Co	10	SEc SW 23-27-5	2977-3017	171
Sinclair Oil Co	16	NW NE 19-27-6	2902-2963	125

Pawnee County

Hamilton Oil Co	2	SE SW 24-20-9	1186-1209	156
Hamilton Oil Co	5	SE SW 24-20-9	1160-1190	15

Seminole County

R. H. Smith	1	NEc SW 32-8-6	1849-1857	40

Stephens County

Magnolia	7	SE NW 30-1S-8W	2256-2277	200
American P. L. Co	1	NE SE 16-1S-8W	T.D.2735	Dry
Pace Bros	1	SEc NW 12-2S-6W	T.D.2210	Dry
Champlin & Winkler	1	SW NW 21-2S-7W	T.D.1965	Dry

Tulsa County

Thompson & Black	1	SW SW 5-16-13	1699-1703	12M
Pennington et al	3	SW SE 28-19-14	T.D.1406	Dry

KANSAS

Ellsworth County

Arcola O. & G. Co	1	SE SW 21-15-6W	T.D.4005	Dry

Cowley County

Smith Bros. et al	2	NE SW 36-32-4	T.D.1524	Dry

Greenwood County

Brown, Rodgers et al	1	NE SW 13-24-10	T.D.2750	Dry

Existing Contracts Assure California Oil Will Be Factor Over 1924

By Paul Wagner

STAFF REPRESENTATIVE

SAN FRANCISCO, Oct. 4. CALIFORNIA'S effect upon the remainder of the domestic petroleum industry in 1924 can be definitely measured in terms of production in excess of crude consumption within the Pacific coast province plus existing requirements.

The turning point in the California situation having been reached, principal operating interests will exercise caution in extending storage construction beyond the point of unfinished progress estimated to total approximately 10 million barrels of room.

Based upon roundly 85 million barrels of crude in storage in California, plus additional construction of 10 million barrels of room and possibly 10 milion barrels of unfilled storage existing, the limit of this type of plant investment would appear to be approximately reached.

These factors balanced against each other, a broad view of the situation brings up the conclusion that the early part of 1924 will find little California crude handled under storage policies, except as it may equalize with whatever withdrawals may take place after the first of the year. In other words the assumption in competent quarters is that spot sales of cargo commitments will be more or less available and in quantity equalizing broadly with the daily average excess of production over and above Pacinc coast requirements plus measured contracts in effect.

It is estimated that 100,000 barrels daily of crude contracts exist over 1924 to be supplied by California sellers. These contracts were entered into by interests who, inferentially at least, have in sight either production or storage crude with which to take care of these sales obligations. Should it become necessary for them to do so, this said without regard to decline of production and field factors, these contracts would be filled from storage and thereby continue in 1924 the influence of California upon Atlantic seaboard operations; thereby affecting Mid-Continent conditions.

The ability of California to consume raw materials in Pacific coast plants was estimated by the writer last spring to reach approximately 450,000 barrels of crude daily by the end of 1923. That ability exists and possibly may reach as high as 500,000 barrels daily; but actual crude consumption by these refinery facilities has averaged more like 400,000 barrels daily so far in 1923.

Need Of 600,000 Barrels Daily

Allowing a full factor of safety in estimating California's crude consuming capacity at the higher figure, measured contract requirements of roundly 100,000 barrels, plus home consumption of 500,000 barrels, would bring up the quantity of daily production needed in 1924 to 600,000 barrels daily.

Considered in terms of total requirements against total daily average production for the entire state and in the light of the aforementioned storage situation, it could be assumed that any excess over 600,000 barrels daily average production would be available for movement in intercoastal and world shipping. This reservation should be made, however, that conditions within the industry affect different companies variously, in line with the character and development of their properties, so that a detailed study of the future pre-supposes, in order to measure accurately all the factors, a knowledge of cause and effect that can be known only as contingencies arise.

Treated from the broader viewpoint, however, and disregarding the aforementioned uncertain factors which are relatively unimportant, it can be said the the moment California daily average production nears the point where its aggregate amounts to about 650,000 barrels daily the availability of crude for shipment away from the Pacific coast will be narrowed down materially. This excess 50,000 barrels daily will constitute, so to speak, a margin of safety that probably will be found small enough and which in the light of the varying exigencies of company needs will be hardly enough.

The thing that it is here meant to say is the certain crude shortages may then appear in the case of individual companies, whereas in the case of others such a condition may not be apparent. Also, the whipsawing of the cross-currents that reflect individual company operations may make it possible for certain interests to store crude at times when the general situation, approached from a purely statistical basis, would show an apparent surplus.

It is intended in this article of the present California series to discuss the conditions under which the Pacific coast industry will function in 1924 rather than to attempt to show with any degree of detail what the rate of decline will be from the peak of production. This production peak, for the purposes of this discussion, either has been reached already or it is at the point of being reached. Should it appear later, that an actual peak of production is still ahead of the month of September, such a condition will be found in the final analysis to be of interest mainly as a statistical statement.

Production Tendency Downward

From now on and for months ahead, the production tendency will be downward; and should it be proven later that the peak has not been actually reached then there is no controverting this factor—that this bugaboo of the petroleum industry is at least tottering at the top of its high level.

A previously published article of the series gave the publicly expressed views of many operating executives and petroleum engineers whose training and knowledge of California conditions made their appraisals of the situation worthy of the utmost consideration. To this symposium, the writer added his own conclusions, based upon first hand field investigation plus the collection of data bearing upon the situation and which was obtained from private sources of unimpeachable integrity.

Summed up briefly and weighing the thoughts of those who are recognized most competent to judge, through their experiencs and environment, the conclusion was reached that barring unforeseen eventualities, the last half of 1924 will find California production approximately balanced with requirements and it is not impossibe that noticeable draughts on storage will be under way as early as August 1 of next year. Reverting to individual company operations, it is not inconceivable that some interests will be in such a position sooner; it is possible only to treat that phase of the situation as a whole and patently details in the narrower sense cannot be gauged far in advance in a survey of this kind.

Filling Storage for Inventories

Inferentially, most of the purchasing companies will have their crude storage approximately filled Jan. 1, for inventory purposes; but the desired end accomplished in this regard, that phase of the situation may show up differently as soon after the first of the year as it may be possible to readjust operations in line with future requirements.

There is no disposition even now to contract crude ahead, in excess of existing commitments. The rate of decline of the flush fields of the Los Angeles Basin is recognizedly rapid. This, the writer pointed out in detail last spring; but the degree of rapidity as measured in short time periods, such as weeks and months, necessarily brings up considerable lack of agreement under varying conditions, such as water intrusion and other field problems. Few responsible executives, however, would care to make additional sales ahead, other than for spot delivery over the remainder of 1923, and probably none would now enter into new contracts over and above those currently existing for 1924.

The five companies who at all times carry the maior load of the petroleum industry in California are the Standard, the Shell Co. of California; the Associated Oil Co., of the so-called Southern Pacific group; the Union Oil Co. of California and the General Petroleum Corp. All but the Shell are purchasing companies. The latter, from an important but relatively smaller recent influence, has built itself quickly into active competition with the others, all of which except the General are Pacific coast distributors of the first

rank. The General markets its gasoline and refinery products entirely in bulk.

An interesting point frequently rereferred to with regard to the prevailing situation has to do with the policy of the Shell in contrast to that of the Standard. The Shell's policy has been that of liquidating stocks at a time when the Standard undertook to do all it could to store crude.

Until the production debacle of 1923, which made it impossible to do so, the purchasing companies had always considered in California that it was their duty to the industry to take every barrel of crude offered at some price. The Standard eventually found it necessary to limit the producer to contract quantities instead of continuing to take the excess that formerly it had always received.

Before being forced to the point, however, the Standard shut in many of its own wells in older fields in order to handle as much outside oil as possible. The Standard, however, never went below the quantities called for in its contracts, holding out against pressure from the prorating committee of Independent producers in southern California who sought to have it abrogate them at the producers' request.

The Standard, therefore, has been building up tremendous stocks both in its existing facilities and through a construction program that called for millions of barrels of additional room. Meantime the Shell, under its liquidating policy sold vast quantities of crude that moved into the world channels.

Movements To Foreign Plants

Plants of other arms of the Royal Dutch-Shell group at Tampico and Curacao are running on California light crude. Reports that Shell loadings of California crude have moved to Swansea, England, are not confirmed and are believed to be untrue; but it is not improbable that products of the California crude run through Tampico and Curacao plants of the Royal Dutch-Shell group have moved in quantity to the United Kingdom and Continental Europe.

These crude movements, plus competitive efforts of the Shell in Pacific coast distributing territory, have tended to keep down stocks of raw material on hand. The Shell is now preparing for an aggressive storage policy and should it see fit is in tactical position to enter upon a purchasing policy such as is has refrained from in the past.

California Stocks Analyzed

As bearing upon the situation in general and more specifically upon the policy of principal operators in opening up shut-in production of the older fields, it is interesting to analyze field, refinery, pipeline and tank farm stocks of crude, residuum and tops.. This analysis is based upon August figures of the American Petroleum Institute issued in September by the Pacific coast offices in charge of Norval White.

At the end of August, according to Mr. White's figures, total stocks amounted to 83,123,835 barrels, or an increase from 78,655,604 barrels, July 31. Until September figures are available, the further increase is more than conservatively indicated by the use of the round figure, more than 85 million barrels stocked.

Further references herein are based upon August figures, which show refinable crude stocks of 20 deg. Be., and lighter, totalling 29,029,198 barrels; heavy crude testing below 20 deg. and including residuum, 43,696,865 barrels, tops, 10,397,772 barrels.

Fuel crudes and residuum, as shown by American Petroleum Institute figures, increased from Oct.1, 1922 stocks of 39,900,530 barrels, to 40.745,093 barrels, April 1, 1923 and 43,696,865 barrels, Sept. 1, 1923. Of the latterly mentioned increase, 2,027,043 barrels was in the period from Aug. 1, to Sept. 1, 1923.

Refinable crude, Oct. 1, 1922 totalled stocks of 16,358,771 barrels as compared with 25,848,478 barrels, April 1, 1923. The April 1 total however, includes tops. Within the period mentioned a new basis of showing stocks was reached by the American Petroleum Institute. This basis divided the April 1 total into 4,282,303 barrels of tops and 21,566,175 barrels of refinable crude as compared with Sept. 1, 1923, figures showing 10,397,772 barrels of tops and 29,029,198 barrels of refinable crude. The two bases of computation are outlined to make possible as near as may be a direct comparison of these stocks.

The refinable crude now stocked is assumed to be capable of giving up approximately 20 per cent motor fuel recovery, or nearly 6 million barrels; the tops are estimated by the writer to be capable of finishing 85 per cent gasoline, or approximately 8.5 million barrels. To this total of 14.5 million barrels of motor fuel in sight may be added more than 3 million barrels of finished gasoline shown by the United States Bureau of Mines figures to be stacked.

These figures are especially interesting when studied with relation to the gasoline situation down to Aug. 1, as shown by a tabulation of the Independent Oil Marketers' Association, Los Angeles, which tabulation (in millions of gallons) is based upon Bureau of Mines data. That table accompanies this article.

Disregarding normal day to day manufacturing out-turn of motor fuel, stocks

Production Of California

(Figures for Production And Stocks are in barrels of 42 Gals.)

District	Barrels Per Month	Daily Average Aug. 1923	July 1923	Aug. 1922
Kern River	600,899	19,384	19,499	19,627
McKittrick	184,305	5,945	5,988	6,248
Midway-Sunset	2,296,565	74,083	73,177	76,079
Elk Hills	686,195	22,135	23,715	29,102
Lost Hills-Belridge	115,575	3,728	3,778	6,726
Coalinga	446,586	14,406	13,211	15,521
Wheeler Ridge	13,009	420	282	.....
Watsonville	1,783	58	57	61
Santa Maria	266,679	8,603	8,363	8,651
Summerland	4,516	146	146	150
Ventura-Newhall	319,096	10,293	10,632	8,527
Los Angeles-Salt Lake	100,906	3,255	3,195	3,399
Whittier	52,653	1,698	1,716	1,918
Fullerton	359,921	11,610	11,149	11,439
Coyote	67,881	2,190	2,456	18,090
Santa Fe Springs	9,998,169	322,522	297,830	31,750
Montebello	332,268	10,718	10,411	19,319
Richfield	508,509	16,404	16,517	21,907
Huntington Beach	3,242,053	104,582	110,228	27,430
Long Beach	6,659,351	214,818	198,041	76,091
Torrance (Redondo)	183,086	5,906	4,515	186
TOTAL	26,440,005	852,903	814,906	382,221
July	25,262,082	814,906		
Increase	1,177,913	37,997		

Study Of Gasoline Situation In California

Based On Figures from U. S. Bureau Of Mines.

(In Million Gallons)

Output	1922	1923	1923 increase over 1922.
January	44.7	92.6	47.9
February	43.8	92.5	48.7
March	49.1	104.4	55.3
April	50.9	102.4	51.5
May	52.4	112.3	59.9
June	54.9	115.3	60.4
July	59.0	121.2	62.2
	354.8	740.7	385.9
Stocks			
January	57.8	116.4	58.6
February	76.4	119.8	43.4
March	63.7	138.0	74.3
April	65.8	136.6	70.8
May	56.3	147.1	90.8
June	48.4	142.8	94.4
July	41.9	136.5	94.6
	410.3	937.2	526.9
Indicated Consumption			
January	36.6	75.6	39.0
February	25.1	69.2	84.1
March	61.7	86.1	24.4
April	48.8	103.8	55.0
May	51.9	101.8	49.9
June	62.9	119.5	56.6
July	65.5	121.2	55.7
	332.5	677.2	344.7

of gasoline in California plus raw materials and partially finished goods (tops) total less than a year's supply in sight above ground from which the Pacific coast distributing territory can draw. Thus, it will appear that the desire of the principal companies will be still to conserve their resources against future light oil requirements and that gasoline shipments through the Panama Canal to Atlantic seaboard destinations will be even smaller in the future than they were in 1923.

It is true that the General Petroleum Corp.'s contract with the Atlantic Refining Co. contemplates the possibility of some gasoline movement; but this contract, regardless of what the material shippped may be, is actually based upon crude. Thus, shipments of tops or gasoline, insofar as they might be made, would be adjusted to the ratio of motor fuel recovery had only crude moved.

Coalinga Wells To Be Operated

Firm demand for fuel brings forth the statement that the California industry is faced with immediate opening up of shut-in production in the heavy oil fields at Coalinga, in the northern part of the developed San Joaquin Valley.

The larger companies had shut in virtually all Coalinga production, only the smaller operators exploiting their wells during the recent congested period of Los Angeles Basin development.

There exists now only about 70,000 barrels shut-in heavy production in the Joaquin Valley fields as compared with as high as 130,000 barrels, daily, shut in last spring.

August Production Figures

The accompanying table shows that, according to figures collected by the American Petroleum Institute, the total production of crude oil in California for August amounted to 26,440,005 barrels, an average of 852,903 barrels daily, or an increase of 37,997 barrels daily over July. Sixty-one wells were completed during the month with an initial daily production of 118,433 barrels, compared with 95 wells completed during July with an initial daily production of 161,599 barrels.

Tulsa Exposition Center

(Continued from page 72)

as compared with normal times in Oklahoma. This week there were 60 completions, of which 32 were oil wells, four were gas wells, and 24 were dry holes. Last week 53 completions were divided 38 oil wells, four gas wells, and 11 dry holes. With the exception of a 750-barrel well in Creek county, and one of 475 barrels initial in Tonkawa, wells completed this week were only of ordinary size. The 32 oil wells had a total initial production of 4802 barrels, an average per well of almost exactly 150 barrels. Last week, the 38 oil wells completed brought in 7987 barrels of new production, with the respectable per-well average of 210.2 barrels.

Louisiana Daily Production

SHREVEPORT, Oct. 6—Daily average production in the Shreveport territory during the week ended Oct. 4 showed a decline of 5,915 barrels, the total for the week being 178,869 barrels against 184,784 barrels the week before. Increases were shown in Caddo, light and heavy, DeSoto-Red River and El Dorado, but all other districts reported declines. The Smackover decline amounted to 5,395 barrels.

By districts the daily average for the two weeks, ended Oct. 4 and Sept. 27, was as follows:

	Oct. 4	Sept. 27
Caddo, light	8,496	8,420
Caddo, heavy	2,387	2,350
DeSoto-Red River	6,955	6,720
Haynesville	23,965	24,810
Homer	9,550	9,642
Bellevue	5,711	6,180
ElDorado	18,750	18,122
Smackover	99,855	105,250
Stephens	3,200	3,200
Total	178,869	184,784
Decrease	5,915	

Shreveport District Shows Lowest No Production In Years

By Special Correspondent

SHREVEPORT, Oct. 6.—The lowest ebb reached in initial production in the Shreveport territory, embracing Arkansas fields, for several years was reached during the week just ended, when there were only 17 producers with combined initial yield of 1907 barrels. There were also two gassers and eight failures, a total of 27 completions for the week, compared with the preceding week's record of 32 completions, of which four were failures, six gassers and 22 producers with total initial production 4055 barrels. The decline in initial yield amounted to 3048 barrels.

Daily average production also registered a decline. During the week just closed it reached 178,869 barrels, which was 5915 barrels less than that of the previous seven days' period.

In new production the Smackover district showed heavy decline, showing that the curtailment plan adopted weeks ago is well in effect now. The Smackover record for the week was 11 completions, of which three were failures, and eight producers yielding 1135 barrels. The previous week showed 17 Smackover completions, including three failures, one gasser, and 13 producers yielding 3485 barrels.

In Caddo Parish there were two completions, one a failure, the other a 40-barrel producer, compared with one completion, a 20-barrel well, the week before.

The shallow Bellevue field showed a decline both in number of producers and new production. Its record was seven completions, four being failures, the other three showing initial yield of 234 barrels, against the previous week's record of five producers yielding 345 barrels.

In Ouachita parish there were two gassers, against three gassers the week before, and in the adjoining parish of Morehouse the week had no completion to its credit against one gasser the previous week.

Nevada county, Ark., reported one 150-barrel producer, compared to no completion the week before.

In the Stephens, Ark., district two producers yielded a total of 77 barrels of initial production, compared with two producers yielding 130 barrels the previous week.

El Dorado reported a couple of producers yielding 275 barrels, against a record of no completions the week before.

In Haynesville there was no completion, compared with one 75-barrel well and a failure the week before.

Elm Grove, in Bossier parish, had no completion recorded the past week, compared with a gasser the week before.

Districts out of the completion column the past two weeks were Red River-De Soto, Claiborne (Homer) and East Texas.

Only a few wildcat operations are in the limelight at this time, including some operations around Farmersville, in Union parish, near the Arkansas line.

Completions In North Louisiana And Arkansas Week Ended Oct. 4

Company	Well	Location	Depth	Yield
Chew et al	Fee No. 2	33-21-16	1901	40
Eades et al	Davis No. 1	21-21-14	1346	s. w. aband.
Bellevue				
Corbitt et al	Atkinson No. 2	3-18-12	1105	s. w. aband.
Humble Oil & Ref. Co	Roy Bliss & Weatherby No. 18	15-19-11	400	s. w. aband.
Olmstead et al	Strange No. 6	23-19-11	297	100
R. O. Roy	Scandland No. 7	15-19-11	382	100
Standard Oil Co	Weaver No. 6	14-19-11	391	30
Palmer Corp	Crawford, Jenkins & Booth No. 4	18-16-11	1580	s. w. aband.
La. Creole Oil Co	Walker No. 1	7-15-12	3007	s. w. aband.
Ouachita Parish				
Southern Carbon Co	Fee No. 23	21-19-5e	2206	9 m. cu. ft. gas
Texas-Louisiana Producing & Carbon Co	Fee No. 2	4-19-5E	2218	12 m. cu. ft. gas
Navada County, Ark.				
Smitherman-McDonald	Drake A-1	10-14-21	1188	150 oil and 250,000 cu. ft. gas.
Stephens				
Arkansas Invincible Oil Corp	Wesley A-1	7-15-19	2185	52
Gulf Ref. Co	Hammond No. 2	25-15-20	2109	25
Smackover				
Standard Oil Co	Brown No. 2	19-15-20	2094	50
H. L. Hunt	Keller No. 1	25-15-17	2274	50
Lanier et al	Murphy No. 1	30-15-16	1997	180
Smith Ref. Co	Patton No. 1	31-15-16	2273	200
Standard Oil Co	Umstead No. 6	22-15-15	2017	25
Oil Operators' Trust	Lawton No. 1	10-16-15	2002	400
Plateau Oil Co	Tatum No. 1	7-16-15	2008	dry aband.
Ray et al	Long No. 1	28-16-14	1960	dry aband.
Plateau Oil Co	Tatum No. 3	7-16-15	2022	dry aband.
Standard Oil Co	McClanahan No. 9	6-16-15	1991	30
Texas Co	Graves No. 2	3-16-15	2011	200
El Dorado				
Detroit-Summerfield	Moody No. 5	17-17-14	2144	175
Magnolia Producing Co	Moody No. 2	17-17-14	2171	100

California Standard To Take All Crude Offered

By Special Correspondent
LOS ANGELES, Oct. 3

TWO matetrs of policy, wide apart in their nature, are the outstanding features of petroleum activity in California during the week. The first of these was the announcement by the Standard Oil Co. of California that it will take an unlimited amount of California crude, direct from the wells, at current market prices. The second step in developments was the announcement by the Associated Oil Co. that it plans to shut down quite a number of its producing wells in the Kern county fields and elsewhere, for a limited period.

The Standard's move is taken as an indication that it considers its unused new storage sufficient to cope with any crude production problem that may arise in this state during the coming year, and that it had rather store the other fellow's oil at present prices than take its own oil out of storage or pump its own producers. While it is buying the small Independent's crude it is keeping capped nearly 100 wells in the Murphy-Coyote district near Whittier, Cal., and is holding back a considerable number of old wells in the Montebello field.

No official explanation has been offered by the Associated for its announced intention to shut down a batch of its San Joaquin Valley producers and some of its southern California wells, but the move is regarded as a temporary policy similar to that of the Standard —that of buying instead of producing, while high-gravity crude is low priced.

There is a marked tendency all over southern California to get back to normal. The promoter has been eliminated to a great extent, and is cutting but little figure in the development of the new fields. One of the foremost of the promoters who have operated here within the last two years closed his palatial offices in this city a few days ago and moved to smaller quarters in Long Beach. Another, who has furnished spectacular features and handled more than $6,000,000 worth of stock promotion, is reported to have been placed on a "cash in advance" basis by all the supply houses.

Developments are going ahead in a healthy way. During the week just closed there were 24 new wells brought in, and the State Mining Bureau issued permits for 24 new wells. This is the largest number of new wells ever ushered in by the Los Angeles Basin fields in a single week, and marks the approaching peak of the grand completion program of the southern drillers.

Some of the new wells are excellent properties, but the general average indicates that the petroleum engineers were probably right when they declared, three weeks ago, that the peak of potential production for Huntington Beach, Long Beach and Santa Fe Springs was evidently passed in late July or August.

Long Beach brought in 10 of the new wells, Santa Fe Springs chalked up eight, Huntington Beach finished three and Torrance got three. The three Huntington Beach wells were all in the 200-barrel class. Santa Fe Springs got one that scored 5330 barrels, another that went 2900 barrels, and several that graded down from 1900 to 900. The best of the Long Beach wells ran 3000 barrels. These figures do not indicate a "shot-to-pieces" condition in the Los Angeles Basin, but they do show, according to the big operators, that the gusher days are apparently a matter of history so far as the three historic fields are concerned.

California Daily Production

LOS ANGELES, Oct. 8.—Daily average production in California for the past week was 864,300 barrels a day divided as follows:

	Oct. 6	Sept. 29
Santa Fe Springs	320,000	325.000
Long Beach	245 000	245.000
Hungtinton Beach	85.000	90 000
Torrance	10.000	7,500
Compton	1.300	1 300
Rest of state	203 000	204,000
Total	864,300	872,800

The producers are rapidly turning their attention to Torrance and Compton. Both of these fields are believed to have great possibilities. The list of permits for new wells last week tells the story so far as Compton is concerned. Out of 24 permits, Torrance got 11, Long Beach got 8. Santa Fe Springs got 4 and Richfield got 1. At the same time, of the 5 abandonments authorized 3 of them were at Santa Fe Springs.

The Torrance field is chock full of pleasant surprises here of late. Last week it began cashing in on a fast drilling program which seems to be reaching a period of fruition. Three new producers which it added to the list virtually doubled the daily output of the field, by turning upwards of 3000 barrels of new crude into the pipe lines. The field has had about 30 wells on production for some months, but most of them are in the west end of the field, where the sand is shallow and the daily yield is from 150 to 300 barrels a day.

It begins to look as though this field is going to cut loose with some real gushers, the operators say. Several weeks ago it put on the Midway Northern Oil Company's No. 1 with a flow averaging about 1500 barrels per day, and since then it has been following that clip almost religiously.

During the week the Fortuna Oil Co. hit a gas gusher which developed into a good producer known as the Fortuna No. 1. This well blew out repeatedly while the drillers were finishing the job, and they finally had to put it on without running in the tubing. It shot off at about 3000 barrels a day. It is now doing better than 1500 barrels, through a half inch outlet.

In some respects this well is most unusual. It is said to hold the drilling record of the country. It was drilled to a depth of 3727 feet and completed in exactly 50 days from the time it was spudded in. This well is only a short distance off Carson street and it makes a spread of at least a mile and a half over to the Midway Northern well, thus proving up considerable width in which good producers may be expected.

The Chanslor-Canfield Midway Oil Co. brought in its No. 7 on the same day the Fortuna boomed in, and it did upwards of 1200 barrels. During the week the Standard Oil Co. of California completed its Community No. 4 as a 400 barrel producer, so the field's output took a big jump in the course of a few days and hopped into the major league by completing more than one well a week.

According to the figures of one of the biggest producing companies in the country, out of 175 completed wells at Long Beach, 38 are standing idle, the most of them being inactive because their owners haven't sufficient funds to finance deepening. Out of 297 wells which were drilling until a short time ago, 90 have ceased to drill, ostensibly for the same reason. A general movement to consolidate small companies or turn partially developed properties over to larger companies on a royalty basis is expected here in the near future.

BARTLESVILLE, Oct. 5.—The gas division of the Empire companies is making preparation for the drilling of a deep test well for oil or gas in the old Independence gas field which has been a steady producer for many years. Drilling tools are being hauled on the location and the test is to be started within a short time.

The well will be drilled on the Ben Johnson farm in the southwest corner of the northeast quarter of 25-33-15, Montgomery county, Kan. This is the center of a large block of acreage held by the Empire companies. In drilling this test the Empire plans on making a thorough test by going to the granite if necessary. The Empire will push below the Bartlesville from which the field has always produced and will test the Burgess, Wilcox and Turkey Mountain sands, if necessary.

The field is on the Kansas Natural system and the test well is located four miles south of Independence.

Gulf Coastal, Texas Completions Week Ending Oct. 6, 1923

Company	Lease—Well	Field	Depth	Prod.
Orange Petroleum Co	Winfree 4	Orange	3573	500
Orange Petroleum Co	Winfree 8	Orange	3588	600
Rycade Oil Co	State "B" 1	Orange	3430	175
Sun Co	Belile 1	Orange	3480	40
Luling, Caldwell County, Completions				
Caldwell Oil Co	Hardeman 3	Luling	2130	500
Prairie Lee Oil Co	Merriweather 3	Luling	2135	600
Royal Oil Co	Tabor 5	Luling		1000
Royal Oil Co	Tabor 6	Luling		600

Mammoth Said To Have Cancelled 20 Of Its 100 Wells

By Special Correspondent

CASPER, Oct. 6

MAMMOTH Oil Co. was fortunate during the storms and high water of the past week in escaping with practically no damage. At the pump station, water interfered for a few hours working of the pumps but none of the gathering lines or main pipe lines were broken. There was slight damage to the telephone line which was soon remedied.

It is understood that New York offices of the company have cancelled 20 of the 100 wells authorized last summer for which locations have already been made. This does not mean that there will be any change in the contract between the government and H. F. Sinclair as the company is now ahead of the schedule called for in the contract.

The company is getting ready to resume drilling on its deep test near the center of the field which was started for the Lakota sand. The location is known as No. 101 and is in the northwest corner of NE¼ Sec. 10-38-78. When this test was started early in the year it was intended to carry it to the Lakota sand but at 1020 feet it ran into shale oil and for months produced at the rate of 150 barrels daily and is now pumping 50 barrels a day. The rig was skidded 50 feet and another hole started which found another shale well at 2000 feet which produced 200 barrels daily. It is still a good well. It is expected that the Lakota sand will be found in the center of the Teapot between 3800 and 4000 feet.

Four Producers Completed

Several good completions were reported by the company in the week ended Oct. 6, as follows No. 303 SW¼ Sec. 28-39-78; making 150 barrels at 2910 feet; No. 406, SW¼ Sec. 20-39-78; making 150 barrels at 2835 feet; No. 303, SW¼ Sec. 21-39-78; making 100 barrels at 2845 feet; No. 110, Sec. 29-39-78;; estimated at 200 barrels at 2817 feet.

No. 101, NW¼ Sec. 3-38-78, is on top of the sand at 2965 feet with 1500 feet in the hole and looks like it would be one of the best wells in the field. It should be a completion early next week.

According to reports emanating from Washington. Senator Smoot's committee on the investigation of the government's contract with Harry F. Sinclair for the development of Teapot Dome in Wyoming will begin to function in Washington on Oct. 15. It has been suggested that it would be a good idea for the people of Casper to invite Senator Smoot and his committee to hold their sessions in Casper so that the members could see what has been done at Teapot in the way of development and elsewhere in Wyoming by the Sinclair interests.

Here are some of the things they could find out for themselves if they meet in Casper that they might overlook if the meetings are all held in Washington. If they should visit the field, they would find 23 pumping oil wells, 20 flowing oil wells, 10 gas wells, two water wells and two abandoned holes. They would find 51 wells drilling and 31 rigs up at new locations.

The average cost of drilling these wells is $40,000 each. This would bring the total for the wells already completed up to $2,280,000. When the 139 tests now under way shall all have been completed they will represent an additional drilling cost of $5,560,000. Up to Sept. 1, it is estimated that the Mammoth Oil Co. had expended approximately $2,320,000 on Teapot development. This does not take into consideration preliminary costs of organization, engineering, geologizing and other such items.

Adjoining the Teapot, the committee would see 21 large steel storage tanks of the following capacities; Two 55,000 barrels, two 64,000 barrels, and 17 80,000 barrels. This represents a total field storage capacity of 1,598,000 barrels at a total cost of $800,000.

At the close of August 541 tests for oil and gas were under way in the Rocky Mountain region. Of this number 358 were drilling and 183 were new rigs or else old operations temporarily shut down. This compares with a total of 581 tests under way at the close of July when there were 374 tests drilling and 207 rigs.

This shows a net reduction in drilling operations of 40 in the month when compared with the record of the preceding month.

In August there were 142 completions of which 108 were oil wells, one was a gas well and 33 were failures. The 108 oil wells developed an initial daily maximum production of 16,000 barrels. The record for July was 121 completions, 82 oil wells, six gas wells and 32 failures with an initial daily production of 11,215 barrels. This was an increase for August of 41 completions, 46 oil wells five gas wells, one dry hole and 4785 barrels in new production.

Maverick Springs field in Fremont county, promises to be the scene of considerable development this fall and the coming year. Two standard rigs have been shipped to Shoshoni to be erected in that field by the Western States Oil Co. connected with the Haskell interests. It is understood that the Western States has secured control of 1229 acres at Maverick and will drill 7 wells.

The oil possibilities of northwestern Colorado are attracting considerable attention from the larger companies and most of them either have or have had their men scouting in the district. They are following the usual custom of saying little as to what they are doing in the way of obtaining leases but it is known that many important deals have been consummated and that the coming spring will usher in a number of drilling operations.

Prospecting in a small way has been going on in the district at intervals for several years but the larger companies gave it no serious consideration until the Baxter basin field in Sweetwater county, Wyo., came in as gas structure. This resulted in some scouts investigating the extreme northwestern corner of Colorado and northeastern corner of Utah and the tying up of some acreage but no test wells were put down. Then came the discovery of oil in the shale on the Hamilton dome by the Texas Production Co. which was too important for the other operators to ignore.

The Colorado state land board has granted leases on approximately 40,000 acres in northwestern Colorado. Officers of the board estimate that not less than 100,000 acres of other than state land have been tied up. These leases are mostly on the Tow Creek, Craig, Hamilton, Fish Creek, Ohio, Williams Park and Chimney Creek structures. Most of these leases have been taken by individuals and while there are indications that some of these represented large companies, there is no positive verification except in the case of the Texas Production Co., which has acquired leases on several structures.

It is known, however, that some of the larger companies have definitely decided to put down test wells the coming spring on various structures and they consider the chances very favorable for bringing in oil and gas production.

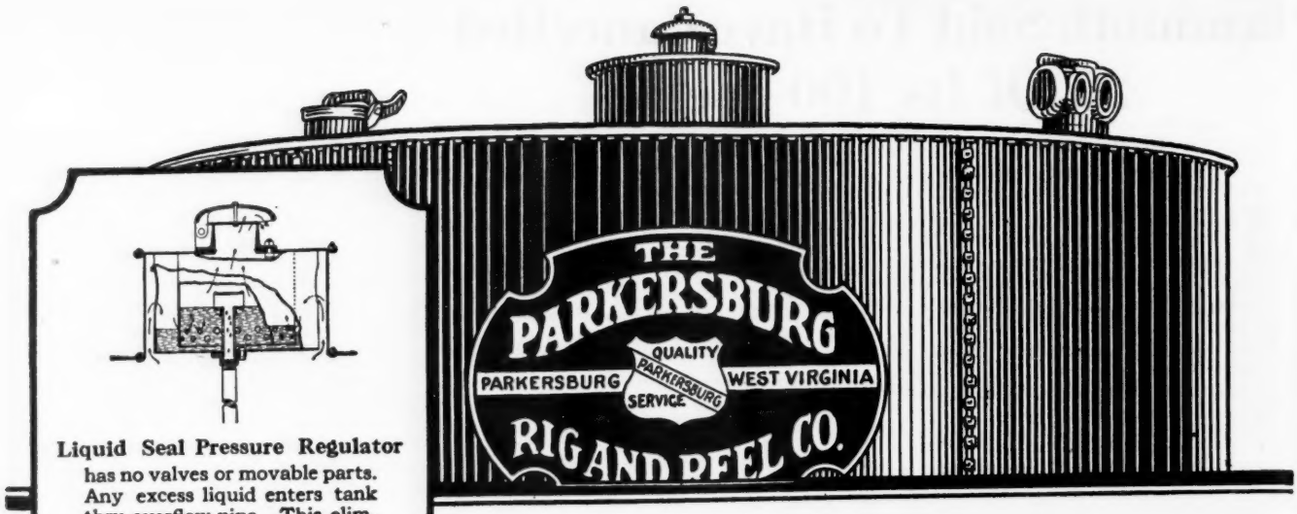
Rocky Mountain Pipe Line Runs

Pipe line runs in the Rocky Mountain region for the week ended Oct. 6 showed a decrease of 25,320 in the daily average when compared with the record of the preceding week. Runs follow:

Fields	Oct. 6	Sept. 29
Salt Creek	99,000	130,000
Teapot	4,200	4,700
Big Muddy	4,250	4,250
Lance Creek	460	455
Pilot Butte	90	85
Lander	385	400
Lost Soldier	4,900	5,300
Rock River	3,875	4,000
Grass Creek	4,825	4,885
Hamilton Dome..	500	510
Elk Basin	1,910	1,925
Notches Dome ..	415	400
Greybull, etc.	1,800	215
Osage	945	1,090
Ferris	130	200
Cat Creek	5,360	5,545
Kevin-Sunburst ..	3,580	3,660
Miscellaneous	575	600
Total	143,900	168,220

FORT WORTH, Oct. 6.—The Texon Land and Development Co. has finally iunked its No. 2 University lands, in Reagan county, at a depth of 500 feet, after a fishing job of months. This is close to the Texan Santa Rita, or University well, as it is also known, wildcat completed early in the summer, more than 70 miles from production. The No. 3 is drilling around 3000 feet, and the No. 4 is down around 500 feet.

LOS ANGELES, Oct. 4.—W. C Hill, petroleum economist, headquartered at the Washington office of the U. S. Bureau of Mines, was a California visitor during September spending a week or more at the San Francisco office of the bureau and visiting the various oil fields of the state.



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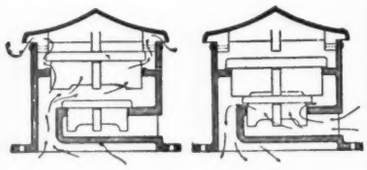

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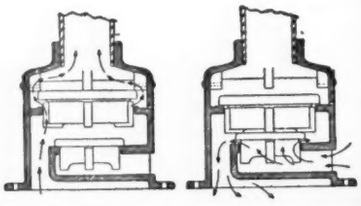

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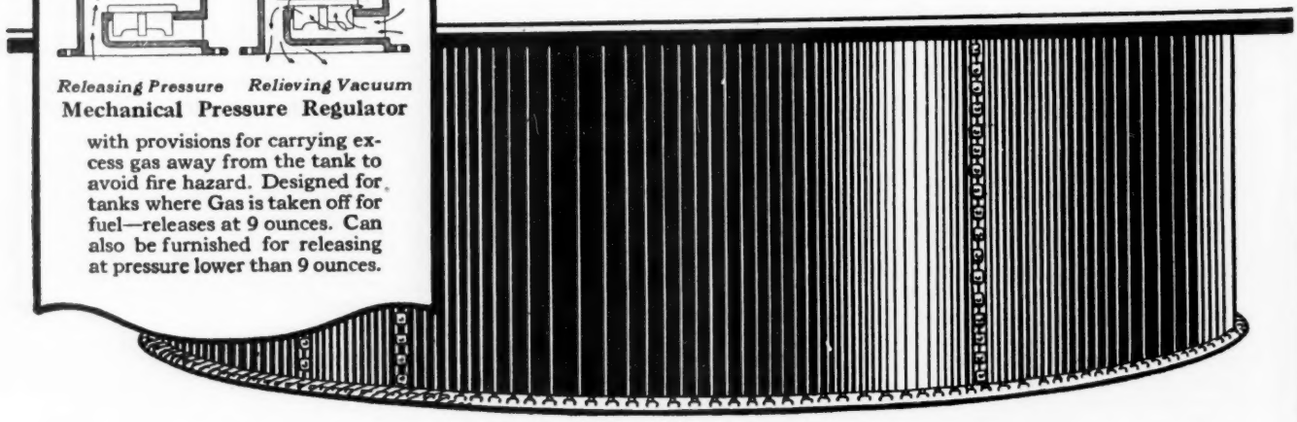

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Would Set Oil Industry In Right Light Before Public

By Special Correspondent

SHREVEPORT, LA., Oct. 5

THE importance of an educational campaign to clarify the public mind as to who is the legitimate oil man and who is the one who preys upon the public through unscrupulous activities, so that the oil industry will have proper recognition when it comes to legislation, taxes, license and other things connected with the legitimate industry, was the idea upon which particular emphasis was placed tonight at the annual meeting of the Louisiana-Arkansas division of the Mid-Continent Oil & Gas Association.

The meeting, attended by some 50 men identified with the industry in Louisiana and Arkansas, was held at the Youree hotel, and the program consisted of dinner, several instructive and impressive talks and the election of officers. Clyde M. Bennett, president, presided and introduced the speakers.

An address prepared by George O. Baird, one of the leading operators of this territory on the subject "Give the Public the Facts," was read by Bradford Hearn, in the absence of Mr. Baird. The address directed attention especially to unscrupulous stock promoters, blatant politicians and others of that type who have been doing the industry great harm, and recommended that steps to set the public right be taken.

His views were supplemented by Secretary Joseph B Elam, who told of an educational campaign through the press already under way by the Louisiana-Arkansas division and followed his formal report with an exhortation that the organization go on record as favoring a campaign to clarify the public mind as to who is a legitimate operator and who is not legitimate. Unanimous endorsement was given this recommendation.

Other Speakers

Others who spoke besides Mr. Baird and Secretary Elam were the retiring president, Clyde M. Bennett, on the subject "Two Years as President"; H. W. Bell, supervisor of minerals, Louisiana Department of Conservation, on "Notes on Conservation:" Henry C. Walker Jr., on "The Trend in Taxation;" Bradford Hearn, on "Memberships;" and B. F. Roberts, city attorney, who delivered the address of welcome for Mayor L. E. Thomas. C. D. Keen was to have delivered an address on "Finances," but was unavoidably absent. The subject of finances, therefore, was embodied in the secretary's report.

The new officers were elected as follows:

J. R. Munce, vice president of the Arkansas Natural Gas Co., president; C. D. Kenn, president of the Shreveport Producing and refining Co., vice president; C. R. Minor, vice president of the Gulf Refining Co., vice president; J. R. Crawford, president of Crawford & Sebastian, vice president; George O. Baird, operator, who was receiver for the Gilliland interests, vice president; Ben Johnson, president of the Commercial National Bank of Shreveport, treasurer; and Joseph B. Elam, re-elected secretary.

Executive Committee

Executive committee: R. E. Allison, George O. Baird, Geo. Belchic, Clyde M. Bennett, C. W. Brown, C. K. Clarke, C. P. Clayton, E. M. Courtney, J. R. Crawford, Walter George, Bradford Hearn, O. L. Hickman, Harley R. Hinton, E. D. Holcomb, Ben Johnson, C. D. Kenn, C. R. Minor, J. R. Munce, A. M. McCorkle, N. C. McGowen, F. Ray McGrew, E. R. Ratcliff, D. C. Richardson, Elton Rhine, V. W. Robinson, R. O. Roy, B. L. Ryan, William (Dick) Sebastian, J. Y. Smyder, B. S. SoRelle, A. H. Tarver, A. S. Warren, L. S. Westcott, D. R. Wilson, and R. W. Howe.

After the association adjourned the executive committee met and formally elected the new officers and also chose the new legal committee consisting of: H. C. Walker, Jr., chairman; J. S. Atkins, W. C. Barnette, Thomas J. Gaughan, J. K. Mahoney, T. M. Milling, E. P. Lee, J. G. Palmer, W. E. Patterson, W. M. Phillips, Yandell Boatner, W. B. Smith, and J. E. Smitherman.

In his annual address as the retiring president, Mr. Bennett, told of the activities, in a general way, during his two years of service as, first as vice president of the Louisiana-Texas division and then as president of the Louisiana-Arkansas division which was re-organized here a year ago. He acknowledged the co-operation of other officers and of the executive committeemen and expressed appreciation for this assistance. He declared the association is one of service to the members, who have the privilege of benefiting from the experience and counsel of their fellows. He said gratifying things had been accomplished and the association had shown its worth to the industry. He seconded the opinion of Bradford Hearn of the membership committee, that a lot of men would become members if it were simply suggested to them to do so.

Mr. Hearn's ideas also included these: that every person engaged in any branch of the oil business ought to be identified with the association; no one engaged in the oil "game" ought to be admitted; there is needed common counsel, exchange of views, exchange of experience, the spirit of co-operation as opposed to combination; the promotion of candor in dealings one with the other; solicitation of membership cannot be effectively accomplished by a hired hand; members can sell the association most effectively by relating personal experiences of the benefits they have had and observed.

"With a strong, virile, interested membership almost anything can be accomplished, but without it nothing can be done," declared Mr. Hearn in his address. Mr. Hearn further stated that two years ago the organization had 213 members and today it has 267 members, about 40 of them being in Arkansas, the balance in Louisiana.

The address by H. W. Bell, supervisor of the minerals division, Louisiana department of conservation, was largely technical, containing much information of value to those identified with the industry. "With reference to the handling of oil and gas, especially when produced together, the present condition of overproduction does not encourage strict conservation practices in cases where an outlay of money is required to recover or extract oil after it reaches the surface," said Mr. Bell. "You can hardly afford to incur much extra expense in conserving cheap oil."

He said there never has been a serious oil shortage and that may guide in estimating the future. What to do for the future good of the industry and its patrons at this time is highly problematical, he claimed. There is much waste now due to evaporation, at the surface, seepage, fire, etc., due largely to poorly constructed and equipped storage facilities, and also much underground waste is existant, all due in part to the low prices, he stated, and "little, if any profit can be made by the average producer under present conditions."

"Anything that has to do with bettering the conditions attendant upon the actual production of oil is well worth while for the public at large, and conservation is thereby encouraged; an opportunity to make a reasonable net profit is of course the principal factor involved," he said. He also claimed that in order to carry conservation work to the best advantage and especially in the newer fields the operators should determine quite accurately and keep suitable records of the amounts of oil, water and emulsion produced by each well."

Some of the possible improvements that will be of value to the producer were suggested by Mr. Bell as follows: better methods of eliminating water troubles and underground dissipation; reduction of surface wastage; better material and equipment, and more care in handling same; standardization of material; proper application of heat treatment to heavy duty drilling tools and better salvage methods in general.

"In order to solve your particular problems of wastage, your geological or engineering departments should include engineers with aptitude and experience in dealing with the mechanical, physical and chemical features of wells and equipment. On such work the safe and sane future of the oil industry depends to a large extent," said Mr. Bell.

Attorney H. C. Walker Jr., chairman of the legal committee, in his talk on the trend of taxation said that the trend in public affairs was to spend, and in order to spend there had to be money. Almost every member of the lawmaking body, he said, had a pet taxing scheme.

Referring to the tax burdens in Louisiana, Mr. Walker said that the as-

sessment and collection for state purposes in Louisiana have increased in and since 1902 as follows: 1902, assessment $315,583,468, rate 6 mills, collections $3,421,523; 1905 assessment $396,821,157, rate 6 mills, collections $4,253,178.65; 1901 assessment $527,773,950, rate 5 mills, collections $5,224,748.38.; 1915, assessment $590 568,506, 5 mills, collections $7,718,618.87; 1920, assessment $1,698,564 216, rate 5 mills, collections $11,655,465.99; 1921, assessment $1,718,286,902, rate 5¾ mills, collections $13,411,543.54; 1922, assessment not given, rate 5¾ mills, collections $15,395,059.46.

Those attending the meeting tonight were: Clyde M. Bennett, president of the Louisiana-Arkansas division of the Mid-Continent, and vice president of the Louisiana Oil Refining Corp.; Jos. B. Elam, secretary of the Louisiana-Arkansas division; Bradford Heran, chairman of the membership committee of the Louisiana-Arkansas division, and secretary of the Shreveport Producing & Refining Corp.; M. E. Waldron, Louisiana Oil Refining Corp.; I. G. Abney, Louisiana Oil Refining Corp.; Andrew Ensminger, Louisiana Oil Refining Corp.; R. H. Frost, Louisiana Oil Refining Corp.; H. C. Elder, assistant district manager of the Continental Supply Co.; D. N. Hursey, local manager, Continental Supply Co.; T. M. Hope, Oil Well Supply Co.; J. M. Post, district manager, Oil Well Supply Co. F. L. Wiegand, Oil Well Supply Co.; Marx M. Levy, of M. Levy's Co. of Shreveport and head of the Shreveport Retail Merchants' Association; W. N. Blanton, secretary, Shreveport Chamber of Commerce; William Sebastian, of Crawford & Sebastian; C. W. Brown of Brown Bros.; D. E. Hall, Caddo Central Oil Refining Co.; James E. Smitherman (who discovered the Haynesville field); R. W. Howe, Atlantic Oil Producing Co.; J. H. Woods Jr., Atlantic Oil Producing Co.; H. G. Caldwell, Henderson Iron Works; George Belchic, of Belchic & Lasky; A. H. Tarver; L. S. Westcott, Southwestern Gas & Electric Co.; B. S. SoRelle, Simms Oil Co.; G. R. Stevens, Simms Oil Co.; H. W. Bell, department of conservation; C. W. Robinson; B. L. Ryan, C. R. Harrison, L. M. Moffitt; H. R. Evans, H. C. Walker Jr., Judge T. M. Milling, J. S. Atkinson, R. O. Roy, G. Barham, Walter George, R. E. Leigh, G. A. Palmer, B. F. Fisher, S. W. Day, O. L. Hickman, Mrs. Vaughan, and Dolph D. Frantz, managing editor of the Shreveport Journal and Shreveport representative of **National Petroleum News.**

Abandons N. Mex. Test

CASPER, Oct. 5.—Midwest Refining Co. has decided to abandon its Chavez No. 1 on Sec. 4-15-6, San Miguel Creek, McKinley county, New Mexico. The hole tested all the sands to the Lakota and found nothing but water. Drilling stopped at 2154 feet. It did, however, encounter a tight sand at 825 feet which had a showing of oil and a shallow well probably will be drilled at an early date to test out this formation. The casing is being pulled with the exception of the 12½-inch which will be left in the hole so as to make a water well out of it.

The rig at the San Miguel Creek well is being moved to the San Mateo dome, about two miles to the southwest for a test of that structure. Location for this well was made early in September.

Collom Joins Beal As Engineer

Staff Special

SAN FRANCISCO, Oct. 5.—The resignation of Roy E. Collom as state oil and gas supervisor of the California Mining Bureau has been followed by the announcement that he has opened offices at 509 Crocker Bldg., San Francisco, where he is associated with Carl H. Beal in the capacity of consulting petroleum engineer. Mr. Collom's successor has not been named. Information in authoritative circles, however, points to the place being filled by Reed Bush, formerly a California man but more recently identified with Empire Gas & Fuel Co. operations in the Mid-Continent.

Roy E. Collom

Mr. Collom, whose administration of the oil and gas division of the California State Mining Bureau had broadened an already enviable reputation as a petroleum engineer, had been identified in one capacity or another with that institution from 1915 until his resignation was announced, except in the years 1919 and 1920. In 1919 he was connected with the United States Bureau of Mines, first at San Francisco and later he opened the Dallas office.

In 1920 he was United States Deputy supervisor for the Department of Interior in California. In 1921 he took up duties as state oil and gas supervisor. Mr. Collom was a petroleum engineer with the state bureau, at Bakersfield and Taft, in 1915 and in 1916-1917 he was deputy supervisor in Santa Barbara county. In 1918, he was chief deputy supervisor at San Francisco.

Prior to 1915 Mr. Collom was engaged in field work and mining enterprises. In 1914, he was dispatcher and oil accountant for the Producers Transportation Co., at San Luis Obispo; in 1912-1914, assistant to the manager of the Independent Oil Producers Agency; in 1911, gauger for the Associated Pipeline Co., at Coalinga; in 1910, pumper and derrick man for the Esperanza Oil & Gas Co., at Coalinga, and previously with the Bunting Iron Works, Coalinga.

With the exception of the year 1905, when engaged in pipeline construction for the Standard Oil Co. (California), near Port Harford, Mr. Collom's activities from 1902 to 1908 were in the Colorado and Nevada gold mining regions, broken by a mine exploration trip to the state of Chihuahua, Mexico, with E. B. Kimball, mining engineer of San Francisco, in 1906.

Mr. Collom, who was born in Golden, Colo., in 1881, lived at Idaho Springs, Colo., until he was six years old. His family then moved to Denver, where he was graduated from high school in 1899. After leaving high school he worked for a year in the office of M. H. Rogers, famous in railroad circles by the name of "Sitting Bull," the chief engineer of the Denver & Rio Grande railroad. In the fall of 1900, Mr. Collom entered the Colorado School of Mines, transferring to the geology and mining department of Stanford University in the fall of 1903. He was graduated from Stanford with the A. B. degree in geology and mining in 1906.

Mr. Beal, who is widely known as a petroleum engineer, wrote the U. S. Bureau of Mines report on "The Decline and Ultimate Production of Oil Wells, with Notes on the Valuation of Oil Properties" that was issued in 1919 as Bulletin 177. He also was responsible for the United States Geological Survey bulletin on the "Cushing Oil and Gas Fields of Oklahoma," previously isued.

National Transit Company Assessed Damages

PITTSBURGH, Oct. 6.—The director general of railroads under government control during the war is awarded $221,848.15 damages against the National Transit Pipe Line Co., Oil City, Pa., in a verdict returned by a jury Tuesday Oct. 2, in the United States Court at Erie, Clerk of Courts J. Wood Clark was notified here this week.

The case was tried before Judge W. H. S. Thomson and lasted seven days. The verdict is one of the largest sums of money ever awarded in the United States Court at Erie.

The verdict marks the end of litigation which began several years ago when an oil fire started by a hot coal from a locomotive on the Erie Railroad destroyed the plant of the Joseph Reid Gas Engine Company at Erie, causing damage estimated at nearly $250,000.

The engine company instituted suit for damages against the Erie Railroad and the director general was ordered to pay the damages to the company. The government then entered suit against the transit company, alleging that the oil in which the hot coal fell had come from a leak in a pipe line owned by the transit company. The jury at Erie upheld the contention of the government that the transit company in allowing the oil to leak and flood the tracks of the Erie Railroad was responsible for the disastrous fire which followed.

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Survey To Report On Oil Chances In Northwest Colorado

WASHINGTON, Oct. 4

EARLY in August, 1923, high-grade oil was encountered in a well drilled by the Texas Production Co. on an anticlinal fold known as the Hamilton dome, about 13 miles south of Craig, in Moffat county, Colo. The oil was found at a depth of about 2020 feet in beds that lie about 3000 feet below the top of the Mancos shale, and its presence there was not suspected, for the beds that seem to hold the most promise for oil lie near the base of the Mancos shale, 2200 to 2500 feet deeper. The possible amount and value of the oil is not yet known, but even if the oil found is not sufficient in quantity to be of commercial value its occurrence naturally inspires hope that oil in greater quantity may be found in deeper beds, both in the Hamilton dome and in other anticlines in Moffat county.

Parts of Moffat county were mapped during the summers of 1921 and 1922 by a party of the Geological Survey, Department of the Interior, under the direction of J. D. Sears, who is now preparing a report on the area. This report shows that about five miles southwest of Hamilton dome there is another dome which in some respects is even more attractive than Hamilton dome as a place to search for oil, and that these two domes are apparently more favorable for oil than any other anticlinal folds in the area studied by Mr. Sears' party.

Possible Oil Horizons

The Mancos shale, of Upper Cretaceous age, caps both the Hamilton dome and the Seeping Spring Gulch dome, as the dome five miles southwest of Hamilton dome is called. This shale is about 5300 feet thick. The greater part of it is an almost homogeneous mass of marine shale, which when weathered dry is light gray or drab, but when moist, as it is when it is taken from a drilling well, is dark gray or bluish gray. A dark platy shale, 175 to 200 feet thick, which contains an abundance of scales and other remains of fish, occurs in the basal part of the formation. This fish-scale-bearing member may correspond to the Mowry shale, which yields oil at several places in Wyoming. At one place in Moffat county oil was found in joints and between the laminae of this fish-scale-bearing member. Above this member is a sandy zone which at some places includes a bed of sandstone. It has been suggested that this zone corresponds to the Frontier formation, which is the most productive oil-bearing formation in Wyoming.

In the vicinity of the Hamilton and the Seeping Spring Gulch domes a thick lens of sandstone (the Morapos sandstone member of unpublished report by E. T. Hancock) lies about 800 feet below the top of the Mancos shale. This sandstone, which forms a conspicuous escarpment, has been removed by erosion from the crests of both these domes the Mancos shale and the Dakota sandstone, also of Upper Cretaceous age. This sandstone, where it was observed at various outcrops in Moffat County, ranges in thickness from 170 to 250 feet. Its lowest member consists of black chert pebble conglomerate and conglomeratic sandstone. Above this is a somewhat variable ledge of thin sandstone, with which is associated a clayey shale that is at many places greenish or purplish. The uppermost member of the Dakota includes white sugary sandstone, quartzite, and conglomeratic sandstone. At some places the conglomerate at the base of the Dakota sandstone is heavily saturated with oil.

The Mancos shale and the Dakota sandstone are the formations that are most likely to yield oil in the Hamilton and Seeping Spring Gulch domes, but oil may possibly occur in the Nugget sandstone, of Jurassic age, which can be reached by very deep drilling.

Coal Beds Available

Immediately upon the Mancos shale, covering parts of the flanks of the Hamilton and Seeping Spring Gulch domes, lie the strata of the Mesaverde group (Upper Cretaceous), which in this region have been divided by Hancock into the Iles formation, comprising the basal 1350 feet of Mesaverde beds, and the Williams Form formation, which is about 1600 feet thick. Both these formations contain alternating beds of sandstone and shale and some coal. The thickest beds of coal, however, are in the Williams Fork formation, and this fact is of interest to the oil operator, for this coal is an easily accessible and almost inexhaustible source of fuel.

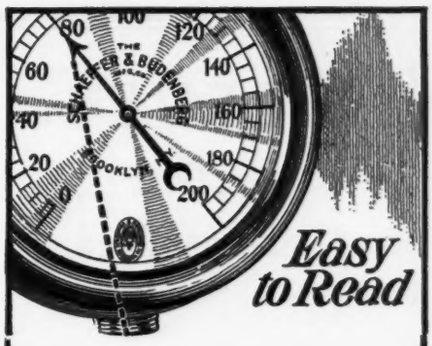
Hamilton Dome

The Hamilton dome is in the south-central part of T. 5 N., R. 91 W., and the north-central part of T. 4 N., R. 91 W. The center of the dome is almost at the southeast corner of section 33, T. 5 N., R. 91 W. The town of Craig, which is the terminus of the Denver and Salt Lake Railroad, is about 13 miles distant from the dome by auto road. Water for drilling can probably be had from either Morapos Creek or Williams Fork by a pipe line one to four miles long. The coal beds of the Mesaverde formation are easily accessible.

The Hamilton dome has a closure of about 800 feet. It is on the south end of the long Williams Fork anticline, and appears to be by far the most promising part of that anticline. The showing of oil found in the well now being drilled by the Texas Production Co. was found below the center of the Mancos shale at a horizon where so far as is known, no oil has yet been found elsewhere in Colorado or Wyoming. The oil in the Rangely oil field also is obtained from the Mancos shale, but apparently from a horizon higher in the formation than the oil found in the Hamilton dome. No sandstone suitable to serve as a reservoir for oil has been observed above the sandy zone that lies about 250 feet above the base of the formation and which should therefore lie about 4150 feet below the surface at the center of the Hamilton dome. The most promising sand appears to be the Dakota, which should be found at a depth of about 4400 feet below the surface.

Seeping Spring Gulch Dome

The Seeping Spring Gulch dome is near the center of T. 4N., R. 92 W. Its



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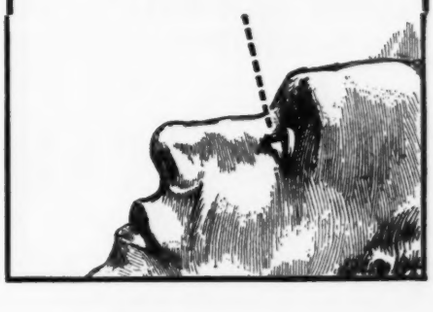

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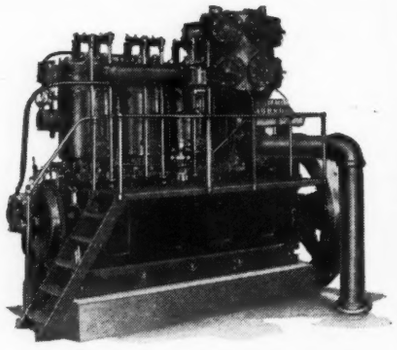

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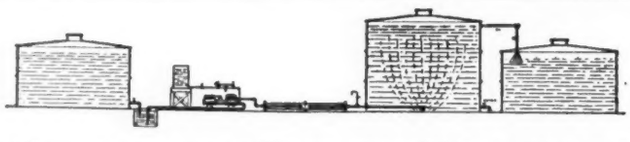

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highest part, structurally, is in secs. 22, 23, and 27 of this township. It is about 18 miles by auto road from Craig.

This dome is on the Axial Basin anticline, not far from its southeast end, and it appears to be by far the most promising part of the fold. In fact the combination of structural conditions and deep erosion of the Mancos shale over the top of the anticline make this dome the most inviting structural feature to the prospector in the part of Moffat county mapped by Mr. Sears' party. The closure is probably about 300 feet, although it may be more. The Dakota sandstone should not lie more than 3000 feet below the surface under the center of this dome, and the Nugget sandstone, of Jurassic age, should lie less than 1000 feet deeper.

Water for use in drilling would probably have to be piped from either Milk or Morapos Creek by a pipe line two to four miles long. An abundant supply of fuel can be obtained from the Mesaverde coal beds near by.

Sets Record For Deepest Rotary Hole

Staff Special

LOS ANGELES, Oct. 3.—The Standard Oil Co. (California), drilling ahead at 7197 feet on its Brownrigg-Keller test, near the edge of the developed Santa Fe Springs field, has already set a record with the deepest rotary hole in the world. So far, the test has encountered no fishing jobs and little mechanical trouble. Drilling is proceeding with a fishtail bit and 4-inch drill pipe in a 7⅞ inch hole.

A total of 4190 feet of 8¼ inch casing was set in this hole, which, however, is not a record in that regard. Such a record is held at Signal Hill (Long Beach), where the Keck Drilling Co. set 5283 feet of 8¼ inch casing of equivalent weight, 36 pounds.

The Brownrigg-Keller test is equipped with the standard rotary drilling material commonly used in the California fields, including a 114 foot derrick. Also, eight lines are used on the traveling block instead of the six wire lines utilized at all ordinary depths.

Drilling has proceeded in the usual manner with Union Tool Co. heavy equipment such as used on other Los Angeles basin field wells; except that, while drilling at the deeper depths, it was found necessary to change the sprocket arrangement to give additional lifting power, so that the drill pipe could be handled with safety. This was accomplished by using a 10-tooth sprocket on the engine and 27-tooth sprocket on the line shaft. Ordinarily, California sprocket arrangement is a 14-tooth installation on the engine and 27-tooth on the line shaft.

WASHINGTON, Oct. 4.—The production of crude oil in the Boryslaw district, Poland, during July amounted to 106,000 barrels, distributed as follows; Boryslaw proper, 35,000 barrels; Tustanowice, 36,000 barrels; Mraznica, 21,000 barrels; Schodnica, 1500 barrels; other, 850 barrels, according to Assistant Trade Commissioner, Elbert H. Baldwin at Warsaw.

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Indian Fields To Be Factor For Years To Come

By Special Correspondent

WASHINGTON, Oct. 4

A REPORT on the extent and prospect of the oil fields of India and Burma has been sent to the Department of Commerce by Harold Shantz, American vice consul in charge at Calcutta, under date of July 12. It is in three parts, one relating to Burma, another to the Punjab and the third to Assam. He treated them in the following order, Burma, Assam, and the Punjab.

Burma

By far the greater part of the production in Burma has come from the Singu and Yenangyaung fields, the amount from each being nearly the same. Singu, although not a new field, has a large reserve supply and is said to be capable of much larger rate of yield than is now being obtained. The Yenangyaung field is old, but through intensive development with the introduction of various ingenious methods of prolonging the life of wells, is holding up its yield in a surprising manner.

The future of Burma is in doubt. Many geologists claim that no new large fields are to be found, and that with the waning of the Singu and Yenangyaung production, Burma will recede to a position of minor importance as regards oil production. The gradual failure of the older fields will, to a certain extent, be counteracted by the discovery of new small fields, particularly in more remote regions possibly including the Arakan coast region as well as northern Burma. New fields of moderate importance are being developed in the Chindwin River region in the northern part of Burma.

The region is, however, so remote from easy transportation facilities that the production is derived at great expense, and can not successfully compete with the down country supply. It must be emphasized that even though no new important discoveries are found in Burma, the present fields will continue to play an important part for many years to come, and the production of Burma, although it may now be at the peak, will probably decline very gradually, or possibly even hold steady for a term of years before any decline.

Assam

The Digboi field, in upper Assam, has been a small but steady producer for many years, and at present supplies a little less than half of the yield from Assam. One of the particularly valuable products of refining the Digboi oil is a paraffin wax which is valued because of its high melting point.

The Badarpur field, in lower Assam, although a larger producer than Digboi, gives an inferior grade of oil which yields comparatively little gasoline and kerosene and finds its best use as fuel oil, much of it being sold locally for use in the tea gardens and other factories. Assam has been thoroughly explored geologically and there seem to be no possibilities of new discoveries of importance. A number of companies hold tracts that are in process of being tested.

The belt of Tertiary rocks which are the source of the oil in Assam, extend from there south along the hill region of eastern Bengal to the Arakan coast. Although it is recognized that these rocks have possibilities throughout the entire distance, no encouraging results rave rewarded efforts at exploration.

Punjab

The Punjab oil region extends from the Salt Range north to the foot-hills of the Himalayas and from the longitude of Rawalpindi west to the Indus River. Within that area are many surface indications of oil which have attracted attention from earliest times. A small amount of oil has been produced from natural oil springs each year, but no valuable production has resulted from drilling operations until lately when the Khaur field was opened by the Attock Oil Co. This field is about 40 miles southeast of Rawalpindi and is connected with that city by a pipe line through which the oil is flowed to a refinery having a capacity of a little over 1,000 barrels per day. This refinery was completed in February, 1922, and since then has been handling all the production of the field which has of late ranged from 16,000 to 26,000 barrels per month. The production of the field during the year 1922 was probably about 202,000 barrels.

New wells are being drilled in the Khaur field and also at other points in the Punjab and the chances are good for other discoveries more important than any made so far. The same belt of rocks extends westward into Northwestern Frontier Province and thence southward along the Baluchistan foothills all the way to Karachi. Explorations carried on at various points in this belt have not been encouraging, but the work has been, for the most part, localized at a few points of interest rather than thorough and extensive.

Both in India and Burma keen rivalry is evident in the efforts of the various oil companies to acquire holdings. In Burma alone there are at least 18 companies making a more or less serious effort to discover and develop new oil lands.

Of these only a few concerns have the capital and technical staff necessary for successful operations. Although all of these are British, or at least organized and controlled by British subjects, the rivalry is intense. The same is true in the oil regions of India although the number of companies actively engaged there is comparatively few.

Four Companies Drilling In Jugoslavia

WASHINGTON, Oct. 4.—At present there are four companies carrying on oil drilling operations in the Zagreb district of Jugoslavia. "Bitumen," D. D., a subsidiary of the Anglo-Persian Oil Co. has been drilling at Resetari, Slavonia, and at Marinovac, Croatia, but without success.

The operations at Resetari have been abandoned and drilling will be continued only at Marinovac. A depth of over 3000 feet has been reached.

"Zelnica" D. D., a private enterprise, is producing a small quantity of oil at Zelnica, Slavonia, the output amounting to 7 to 8 barrels per day from a depth of 2100 feet There is said to be no immediate prospect of an increase in production.

"Bjenik" D. D., which is partially state-owned, has been drilling at Bujavic, Slavonia, but without success, and operations have been temporarily abandoned. The Anglo-Saxon Oil Co., a subsidiary of the Royal Dutch Shell Co., drilling at Sedlarica, Slovenia, struck oil sand at a depth of 770 meters early in July, but the well soon filled with water. Concrete was poured in and drilling has been resumed through the concrete, according to the report of Consul J. F. McGurk at Zagreb.

California Oil Receipts; Petroleum Imports

NEW YORK, Oct. 4.—Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended Sept. 29, totaled 1,964,000 barrels, a daily average of 280,571 barrels, against 989,000 barrels, a daily average of 127,000 barrels for the week ended Sept. 22, according to American Petroleum institute figures:

	Week Ended Sept. 29	Week Ended Sept. 22
At Atlantic Ports		
Baltimore	340,000	70,000
Boston	160,000	.....
New York	1,064,000	262,000
Philadelphia	155,000	172,000
Others	150,000	(a)165,000
Total	1,869,000	669,000
Daily average,	267,000	95,571
At Gulf Coast Ports		
New Orleans and Baton Rouge	95,000	220,000
Daily average	13,571	31,429
Total Atlantic and Gulf Coast Ports	1,964,000	889,000
Daily average	280,571	127,000

(a) Revised.

According to figures collected by the institute, imports of crude and refined oils at the principal ports for the week ended September 29, totaled 1,667,000 barrels, a daily average of 238,143 barrels, compared with 1,441,000 barrels, a daily average of 205,857 barrels for the week ended Sept. 22.

Imports of Petroleum

	Week Ended Sept. 29	Week Ended Sept. 22
At Atlantic Ports		
Baltimore	30,000	.....
Boston	136,000	70,000
New York	370,000	190,000
Philadelphia	111,000	168,000
Others	191,000	118,000
Total	838,000	546,000
Daily average	119,714	78,000
At Gulf Coast Ports		
Galveston district	466,000	277,000
New Orleans and Baton Rouge	268,000	504,000
Port Arthur and Sabine district	75,000	99,000
Tampa	20,000	15,000
Total	829,000	895,000
Daily average	118,429	127,857
At All U. S. Ports		
Total	1,667,000	1,441,000
Daily average	238,143	205,857

PONCA CITY, OKLA., Oct. 4.—Completion of filling stations at Lawson, Mo., and Apache, Okla., increases the total of Marland Refining Co. stations to 106. Of these 60 are filling stations and 56 are bulk stations.

United States Winning Larger Share Of Oriental Kerosene Trade

By A. T. Coumbe, Jr.
Department of Commerce

WASHINGTON, Oct. 3

DURING 1922 the United States exported 895,000,000 gallons of kerosene, valued at $83,000,000, and of this quantity 341,000,000 gallons or 38 per cent of the total was shipped to the various countries of the Orient and Australasia. These returns indicate a substantial gain in this trade since 1913, when these same countries received only 283,000,000 gallons or 27 per cent of the kerosene exported from America.

A review of the official custom returns and statistics covering local production of kerosene shows that the indicated consumption in that part of the world has increased about 6 per cent from 1913, to the end of 1922. However, the 1922 consumption totaling 627,000,000 gallons only approximates the kerosene demand of the countries concerned, as no figures for year-end stocks are available and consequently they can not be considered in the estimates.

Gains Increased Share

In considering the sources of the kerosene consumed in these countries the returns for 1922 show that the United States supplied 54 per cent of the total demand against only 48 per cent in 1913. Other countries foreign to the territory, such as Russia, Persia, and Egypt, furnished 17 per cent of the market in 1913 compared to only 14 per cent in 1922. The proportion of kerosene reaching these markets from the local production of British India, the Dutch Indies, and Japan has also fallen off during the last few years, the percentage being 35 in 1913 and 32 in 1922. Of the kerosene imported for 1922 America commanded 79 per cent against 74 per cent in 1913, or a gain of 58,000,000 gallons over the pre-war year.

The increase in exports of kerosene from the United States to these countries in the 10-year period, 1913-1922, is shown in table No. 1.

Although there has been an increase in gallonage demand during the 10-year period (as shown in table No. 2) there is no gain in per capita consumption when allowance is made for the natural increase in population. The fact is that the per capita consumption has really fallen off in some of the countries, such as Japan and Australia, where the people are progressive and there is a tendency to adopt electricity or gas in place of kerosene as a source of illumination. This market loss, however, has been about equalized by the slightly increased demand in such countries as China and British India, where there are large rural populations, which have little contact with Caucasians and where there is little desire to change from age-old customs.

Japan.—In former years the local fields of Japan in the northern part of Honshu, the main island, supplied about one-third of the demand, however, this production has declined heavily since 1914, so that the kerosene market at present is mostly taken care of from foreign crude refined locally in addition to supplies coming from the Dutch East Indies and America. Incidentally imports of foreign crude for local refining increased from 11,200,000 gallons in 1921 to 23,700,000 gallons in 1922. The countries of origin of the Japanese imports of kerosene for 1922 have not been published as yet, but in 1921 about one-third of the imports came from the Dutch Indies and the remainder from America. The larger part of the 9,000,000 gallons of kerosene from the East Indies was bulk oil, while America's share of 17,700,000 gallons was about equally divided between bulk and packed The greater demand is for bulk oil, which is packed locally before being marketed.

Until the recent disaster in Japan, Yokohama was the principal importing port for kerosene with Kobe second and Nagasaki third in importance.

Chosen.—There is no local oil production in this country, so imports supply the entire market. American importing companies brought in 79 per cent of the demand in 1922, while the Asiatic Petroleum Co. furnished the remainder from their refineries in the Dutch East Indies. The ports of Fusan and Chemulpo are the distributing centers for about 90 per cent of this commodity.

Philippine Islands.—The kerosene market of the Philippines takes more than 15,000,000 gallons annually and over 90 per cent of this demand is taken care of by American companies. The actual distribution by ports is not available, but it is known that most of

Table No. 1.—Kerosene Exports from United States to Orient and Australasia

Countries of destination	1913		1922	
	Gallons	Value	Gallons	Value
Japan	85,399,913	$4,618,890	29,546,154	$4,002,521
Chosen	9,824,680	814,193	5,730,130	838,097
Philippines	13,073,752	1,197,619	7,437,695	1,138,934
Russia in Asia	2,520	470	502,560	68,565
China	79,015,610	5,761,597	155,426,652	18,393,126
Hongkong	7,767,090	740,181	35,290,980	3,955,801
Chinese Leased Territory	7,852,990	665,362	†5,578,640	846,629
French Indo-China	4,700,340	400,079	5,154,297	532,895
Straits Settlements	3,129,995	271,964	1,614,950	242,059
British East Indies	1,601,000	$134,750	3,759,870	377,320
Dutch East Indies	13,417,693	1,079,218	6,580,170	955,633
British India	31,440,972	2,079,517	62,174,876	3,716,233
Ceylon	.....	.....	2,144,920	135,261
Australia	19,898,945	1,948,473	15,140,336	2,329,673
New Zealand	5,573,542	593,203	5,122,280	799,477
Total	282,699,042	20,305,516	341,204,510	38,332,224
Total kerosene exports from United States	1,048,894,297	66,189,265	895,230,641	83,134,510

†Kwantung Province only.

Table No. 2.— Kerosene Consumption of Orient and Australasia

Countries	Production	Imports	Exports	Indicated consumption	Consumption per capita
	Gallons	Gallons	Gallons	Gallons	Gallons
Japan: 1913	25,893,773	48,174,840	5,710	74,062,903	1.4
1922	†6,828,105	33,660,135	132,697	40,355,543	0.7
Chosen: 1913	.....	9,114,970	.....	9,114,970	0.6
1922	.....	6,735,405	*4,176	6,731,229	0.4
Philippines: 1913	.....	14,408,131	.....	14,408,131	1.6
1921	.....	17,309,746	.....	17,309,746	1.7
Siam: 1917-18‡	.....	5,490,865	.....	5,490,865	1.0
1921-22	.....	4,375,872	.....	4,375,872	.7
China: 1913	.....	184,036,917	*52,865	183,984,052	.4
1922	.....	216,953,671	*7,761,569	209,192,102	.5
Hongkong: 1913	.....	(**)	.....	.....	.....
1922	.....	31,572,481	‡‡33,080,336	.....	.....
French Indo China: 1913	.....	(**)	.....	(**)	(**)
1921	.....	11,707,278	.....	11,707,278	0.7
Straits Settlements: 1913	.....	11,755,520	*5,694,760	6,060,760	8.0
1922	.....	19,554,960	*13,742,620	5,812,340	8.0
Dutch East Indies 1913	§157,000,000	8,648,293	123,163,564	42,484,729	.9
1921	§140,000,000	15,081,847	85,125,828	69,956,019	1.4
British India: 1913-14††	§154,000,000	68,869,973	.....	222,869,973	.7
1921-22††	§190,000,000	46,497,772	29,820	236,467,952	.7
Ceylon:1913	.....	4,693,366	.....	4,693,366	1.2
1922	.....	7,064,990	.....	7,064,990	1.7
Australia: 1912‡	.....	24,292,539	366,157	23,926,382	4.6
1921-22††	.....	15,878,390	.....	15,878,390	2.9
New Zealand: 1913	.....	3,269,583	*201,136	3,068,447	3.0
1922	.....	4,127,330	.....	4,127,330	4.0
Total 1913	336,893,773	382,754,997	129,484,192	590,164,578	.7
1922	336,828,105	430,519,877	139,877,046	627,470,936	.7

†Production for 1921.
*Reexports.
‡1913 not available.
**Not available.
‡‡Partly from stocks carried over.
§Estimated.
††Fiscal year, Apr. 1 to Mar. 31.

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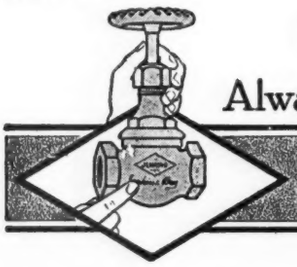

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456,000 ft. lbs. stronger than the type sill in general use, and constructed materially lighter. Patented and used only in "Pennsylvania" Tank Cars.

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the illuminating oil is received at Manila and Iloilo.

Siam.—Custom statistics showing Siam's receipts of kerosene are not available before the fiscal year of 1917-18, but the imports for that and the following years indicate that Siam consumes approximately 5,000,000 gallons of illuminating oil annually. All the imports for this country are received at the port of Bangkok.

China.—This country, although not consuming the volume of kerosene demanded by British India, is the best market for American kerosene in the Orient. There is no local production, so the entire supply must be obtained from foreign countries. The United States is the chief source of supply, furnishing over 84 per cent of the imports in 1922. The Asiatic Petroleum Co. shipping to China from Sumatra and Borneo holds the remainder of the market, but its share declined about half in 1922 compared to 1921, owing to an increased demand for American brands.

Tientsin, Shanghai, Hankow, Canton and Chinkiang in the order named are the chief importing and distributing centers.

Hongkong.—This British port is a distributing center for a large portion of China, Japan, and Siam. The only custom returns available are for 1922 and show the exports to be slightly in excess of imports, indicating that previous years' stocks were drawn upon to the extent of several millions of gallons to make up this export excess as well as to meet the consumption demands of the local population totaling a third of a million. United States exporters furnished 78 per cent of the imported kerosene, while the remainder was supplied from the refineries in the East Indies.

French Indo-China.—No very old custom statistics are available for this country; however, those for 1919, 1920, and 1921 show that this French colony consumes approximately 11,000,000 to 12,000,000 gallons of kerosene annually. There are no exact data covering the distribution of this oil by ports, but it is known that approximately 65 per cent of all imported commodities are consumed in the Province of Cochin China, where Saigon is the principal port.

Straits Settlements.—The ports of Singapore and Penang are distribution centers for kerosene from the Sumatran refineries, so the excess of imports over exports for any one year does not portray the real market demand represented here. A calculation on this basis gives a kerosene consumption of 8 gallons per capita, which is much too high judging from the quantities used in other oriental countries. Of the 6,000,000 gallons excess of imports over exports, it is estimated that not more than 1,500,000 gallons were actually consumed by the 750,000 population, while the remainder should be credited to held-over stocks.

Dutch East Indies.—The refineries of Java, Sumatra, and Borneo of this colony are an important source of kerosene, not only for the local market but the excess kerosene manufactured here is shipped to the other countries of the East and to Australasia. The total exports of kerosene for this colony

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totaled 123,000,000 gallons in 1913, but this item had decreased to only 85,000,000 in 1921. This decline is not due to a failure of the petroleum coming from the local fields, but rather to the policy of the refineries to produce more gasoline and less kerosene from the crude run through the stills. The local demand has also increased somewhat, making less kerosene available for export.

The principal exporting ports for kerosene are Balik-Papan, Borneo, Pangkalan Brandan, Sumatra, and Poeloe Samboe, a storage point on a small Dutch island just off Singapore.

The imports of kerosene from the United States have declined about half since 1913. This is largely due to adverse economic conditions of the last few years and not to a decline in popularity of American brands. The island of Java which contains three-fifths of the population of the archipelago is the chief market for imported kerosene. The ports of Batavia, Soerabaya, and Semarang are the large distributing centers.

British India.—This country with a population of over 300,000,000 is supplied with kerosene largely from the local refineries in Burma and Assam. These plants at present yield more than 200,000,000 gallons of kerosene annually and it is known that approximately 85 per cent of this oil is consumed in India; 14 per cent in Burma itself, while only 1 per cent of it goes into export.

Foreign brands of kerosene are imported up to 50,000,000 gallons annually. The trade showed a tendency to decline recently on account of the commercial depression that has been keenly felt in India for the last several years. The larger share of the imported kerosene is received in bulk and packed locally, America being the chief source of supply.

Ceylon.—This small island off the southeast coast of India with a population of 4,000,000 is a market for about 7,000,000 gallons of kerosene annually. Up to 1921 all imports of American kerosene were in cases, but packing plants have been recently installed, so that part of this market is now supplied with bulk, which is easier and cheaper to ship. Persian kerosene is growing in demand in Ceylon, as over 4,000,000 gallons or 63 per cent of the total imports for 1922 originated in that country. This is a decided increase when compared to the total of 55,000 gallons or 1 per cent which came from there in 1913.

Australia.—Here we have represented a strictly white population living largely in towns and cities, so it is not surprising to find the demand for kerosene falling off decidedly, as electricity and gas become more readily available for illuminating purposes. The present market in Australia, amounting to 16,000,000 gallons, is supplied mainly from America, although about 15 per cent of the total demand is met with Borneo and and Sumatra brands.

New Zealand.—This British dependency demands about 4,000,000 gallons of kerosene annually, and practically all of this is furnished by the American companies established there. More than half of the territory is supplied from the ports of Aukland and Wellington.

Monopoly Impossible Standard Ad Says

CHICAGO, Oct. 1. Carrying out the idea it has been developing through a series of advertisements in the newspapers and through talks by Colonel Stewart when he made his "barnstorming tour" the marketing territory in which his company operates, that monopoly in the oil industry is impossible, Standard Oil Co. of Indiana publishes a full page ad on the back cover of the "Stanolind Record" for September,: "Monopoly? No." The ad goes on to say:

"Monopoly is abhorrent to the minds of the American people and will not be tolerated by them.

"Through it be ever so ambitious to achieve a monopoly, the Standard Oil Co. (Indiana) would fail of its purpose for two reasons.:

"First—such a condition would be antagonistic to American standards and therefore fundamentally unsound.

"Second—the Standard Oil Co. (Indiana) as big as it is, is not big enough to secure control of an industry that touches every phase of commercial and domestic life.

"The principal source of the crude oil used by the Standard Oil Co. (Indiana) is in the hands of others than this company.

"Our competitors have twice as many sales service stations as we and about an equal number of bulk stations, while their combined refining capacity is more than five times that of the Standard Oil Co. (Indiana).

"To indicate the futility of attempting to monopolize the oil industry it is only necessary to quote the following paragraphs from the New York Journal of Commerce:

"'During 1921 there were organized 936 new oil companies with a total capitalization of $1,255,675,000 and during 1922, 784 new oil companies were organized with a capitalization of $1,639,693,000.'

"The Standard Oil Co. (Indiana) has no desire to achieve monopoly, it is content to maintain a steady, healthy growth by rendering the greatest service possible to 30 million people in the middle west."

Shell Gets Drilling Permits

WASHINGTON, Oct. 4.—According to Rollin R. Winslow, American vice consul in charge at Soerabaya, Java, in advices to the Department of Commerce, the Batavia Petroleum Co., subsidiary of the Royal Dutch-Shell, was granted a number of prospecting permits for petroleum in the Soerabaya consular district during May and June according to an official announcement of the Netherlands Indian government.

Ten of these grants cover territories in Saleier, a small island south of the Celebes. Two other permits were for areas in Pasi and Pasi-Tanette, other small islands in the immediate neighborhood.

This same company likewise received seven grants near Boeloekoemba, Bonthain district, South Celebes. The only other permit for petroleum prospecting was given to P. Bosch, Independent, for territory near Kraksaan, Pasoeroean Residency, Island of Java.

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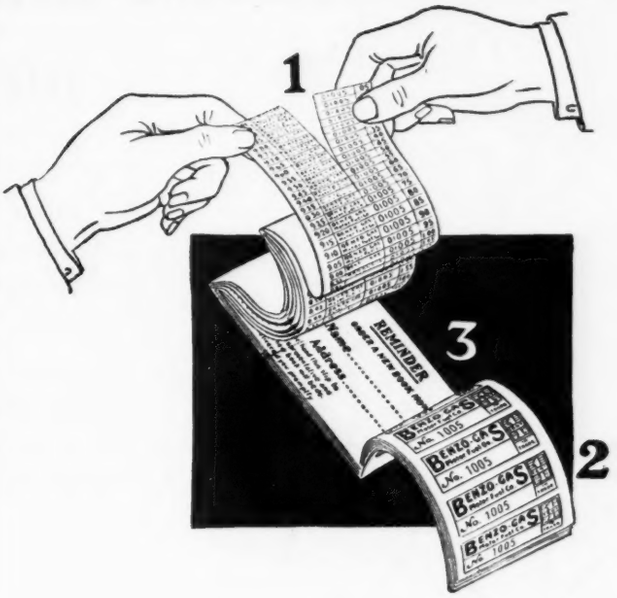

1 *Vertical Perforation* — Perforation of each strip vertically through the center permits of separation when first received in auditor's office, thus preventing misappropriation of collected coupons by employees.

2 *Bulkiness Reduced* — The strip, divided in units of five cents, instead of one cent, and combined with sufficient pages of one-cent coupons for odd change, reduces the bulk of the book. This feature permits quicker handling by station men and auditors.

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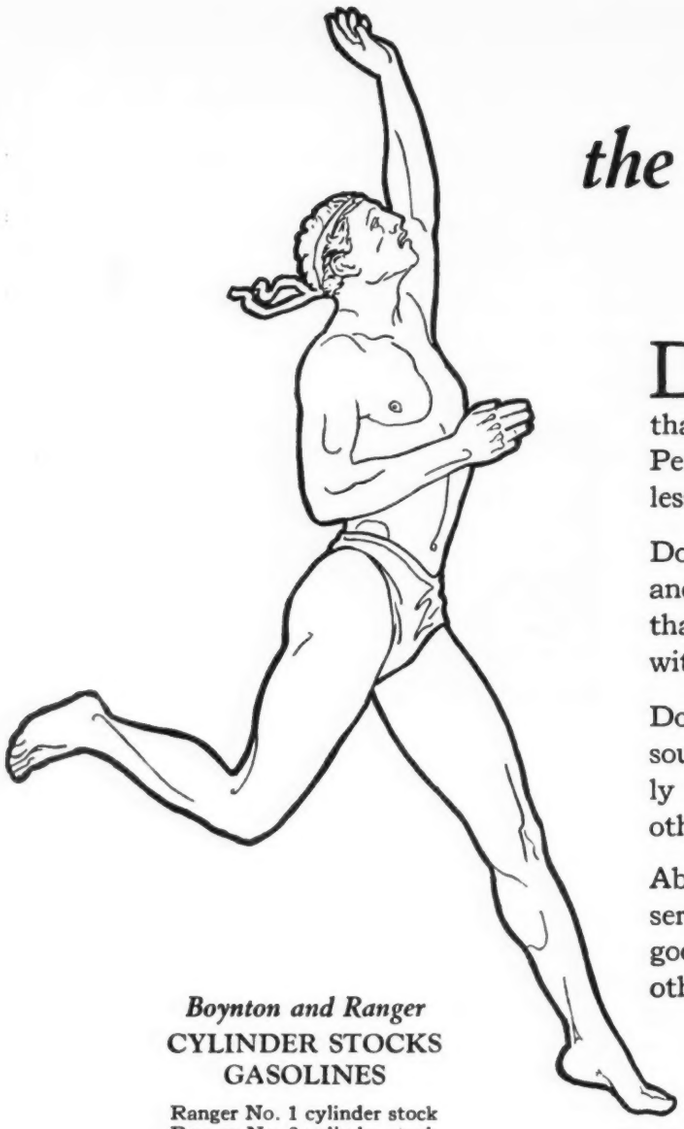

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Does he mean kerosene that has power and illuminating value above the average, that is clear as sparkling spring water and without disagreeable odor?

Does he cause you to think of a reliable source of gasoline, straight run or correctly blended, Navy specification or any other that you may prefer?

Above all, does he in your mind exemplify service—a will and ability to deliver the goods that goes to greater length than others? We chose him to represent this spirit in the Transcontinental Oil Company; and he is a constant reminder of the ideal.

If the Marathon Runner does not represent all these things to you, we have not been doing the business together that it would be to our mutual advantage to develop. Let's get together. What are you in the market for this week?

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CYLINDER STOCKS
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Boynton No. 1 cylinder stock
Boynton E cylinder stock
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Kerosene
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CYLINDER STOCKS KEROSENE WAXES
GASOLINE FUEL OIL GAS OILS

REFINERY-TANK WAGON MARKETS

Mid-Continent Markets Maintain Strength In Heavy Trading

(Complete Refinery prices, pp. 99—101)

TULSA, Oct. 6

MID-CONTINENT markets have continued firm on virutally all products since the opening of October business. The last few days of this week has seen business exceptionally good with gasoline movements maintaining a high rate. Burning oils and home heating distillates are exceptionally strong and natural gasoline has jumped upward as the result of increased buying activity. Fuel oil has been the most quiet item quoted in the Group 3 list.

Much has been said from time to time about the "hand to mouth" buying policy of the jobbing trade. The same can be said about operations of the refining industry in the southwest during the past month or so. Having worked off their surplus stocks, except in certain outstanding plants which are not competing actively in the market, the refiners are keeping their runs at a level which will just about fill orders that come to hand.

In fact, most refiners in Group 3 are now a little behind orders with their production. Buyers seeking car numbers the same day they file their orders for Navy are being forced to shop around. In a number of cases refiners have called on their competitiors for assistance this week in getting out shipments promptly on the orders of regular customers. While some of the refiners are sold up only a few days in advance others are obligated completely over the remainder of the month and one announced today that he would be able to accept no new orders for delivery before Nov. 10

A few scattered cars of Navy were offered on the market one day this week ¼ cent under the prevailing price. They were quickly snapped up and in the last few days no goods have moved on the spot market at less than 6½ cents a gallon.

When they view the orders now on their books and the rate at which new business is being written there are many refiners in Group 3 who expect gasoline to be steady throughout the month. Others have grown so optimistic that they are willing to assert that the bottom has been seen and passed in the first days of September when Navy was sold as low as 6 cents per gallon in some instances.

Tank Wagon Market Weak

The growing weakness of the tank wagon market throughout the middle west as well as in southwestern states is giving refiners here some concern. Tank wagon wars are in progress throughout Oklahoma and Texas. Gasoline is selling to the public in Texas at 10 cents in some places and at 12 cents in Oklahoma City. In each case there is a one cent tax included in the price.

The Standard Oil Co. of Indiana has been forced to meet competition at numerous points in its marketing territory during the past few weeks. This week has seen cuts at important points like Kansas City, St Louis, Minneapolis and St. Paul. Wherever there is a cut the Indiana company is prompt in lowering its prices to meet the condition.

Opinion has prevailed during the past few days that the Standard of Indiana will be forced to lower prices on gasoline throughout its territory again in order to keep its schedule from being torn apart. Guesses are made that the cut may be from 1 to 2 cents a gallon.

With the average tank wagon price in Indiana territory 14 cents a gallon and an average freight charge of around 3 cents a gallon the jobber does not have an abnormally wide operating spread when he must pay 6½ cents for Navy in Group 3. A reduction of 2 cents a gallon would leave him with a margin of only about 2½ cents a gallon.

Take the example of Detroit which got a 2-cent reduction on Sept. 28 to 12.8 cents. With gasoline selling at 6½ cents and a freight rate of 3.69 cents the jobber in that city now has a margin of 2.61 cents per gallon on which to do business.

Let the Price Cutter Fall

There are many here who applaud the action of the Indiana company in keeping its territory clean of price cutting competition. They believe that a close margin now which will prohibit newcomers in the business from cutting and still doing business will be excellent for the distributing branch of the industry. Price cutting competition might as well be eliminated now as at some later date in a heavy motoring season when the cost would be greater, they say.

On the other hand refiners with marginal contracts would be badly hit by a reduction of even 1 cent throughout Indiana territory. The net back on contract goods is too low now to be satisfactory even on the basis of crude bought below the present market. A cut would reduce the average contract gasoline price to considerably below 6 cents.

Theer is a great difference of opinion as to what might happen to the spot market if the tank wagon were to be cut. Some think that jobbers would be slower in buying and that the market might be forced down. Others think that it might possibly be kept up to its present level at least for a month.

Weather conditions this fall do not appear to be conspiring against the refinery markets as was predicted earlier in the year by the long distance prophets. While there have been some rather bad storms in certain areas and considerable rain in others the weather has not been unseasonably bad. Roads are in fair condition generally and with cheap gasoline the motorist is using his car as much or more than usual at this time of the year. The condition is reflected in the large movement of gasoline which is being maintained.

High Test Gasoline Stronger

Cooler weather in the northern states is making itself felt in the market for high test gasolines. On 64-66 the buyer is being required to pay 9¼ and 9½ cents a gallon. The surplus of 68-70 gasoline which existed until recently appears to be cleaned up and prices are firmer at 10¾ and 11 cents whereas last week some goods of this grade was sold at 10½ cents.

In north Texas the export demand has been fairly steady for 64 and prices have advanced even more sharply than they have in Group 3. Most of the refiners there are sold up for some time in advance.

Natural gasoline has been the strongest product in Group 3. Fearing that October would see a slump in buying, large quantities of natural gasoline were sold in advance for October delivery. Now that the month is under way there is a continued demand for spot goods and manufacturers are being hard pressed to find enough material to meet the demand. Active buying on the part of refiners has forced advances averaging from ¼ to ½ cent a gallon this week. Grade A absorption has been selling at as high as 8¼ cents this week with Grade B only a quarter behind. Compression grades are moving actively at 7½ to 7¾ cents.

Production of natural gasoline is being kept at a low point because of the low rate at which wells are being pumped in settled fields. Where flowing wells are being kept pinched back to a certain extent the supply of gas is lessened as well. With cooler weather coming on the manufacturers are able to get a somewhat larger recovery however, from the gas which does reach their plants.

Lubricating Oils Steady

New prices on viscous neutrals appear to be maintained without difficulty. There have been no signs of strength in the non-viscous oils. Cylinder stocks have been unable to gather strength although inventories have been worked down. Transcontinental Oil Co. has just completed the shipment of three train loads of cylinder stocks to New Orleans for export movement. Bright stocks are somewhat slower. Some plants which have been unable to accept new business have caught up with orders and are now able to make early shipments.

With stocks of the viscous neutrals low and production being held down there is a strong feeling among refiners that prices as now quoted can be maintained easily and that there may be other advances in spite of the fact that other areas appear to have somewhat more attractive prices.

Compounders have kept their purchases small for several months on account of

(Continued on page 105)

"Why Aren't We Making Money?"

WHEN dealers ask this question, the answer is rather obvious. Nine times out of ten the root of the trouble lies in the lack of quality in the products handled.

With the coming of cold weather inferior and carelessly refined products fail to deliver the maximum of service and performance demanded by the discriminating consumer.

OIL CREEK dealers make money because no extremes of temperature can affect the *extra-quality* of good refinery products that are made from Pennsylvania crude, *only;* they prosper because they maintain the constant loyalty and respect of their patrons; they succeed because we can and do take care of their entire needs by furnishing a complete line of refinery products made from the crude petroleum which is adjudged the standard of comparison.

A letter today will pave the way to better business and we will do our share to make our relations friendly and profitable.

It's your move!

OIL CREEK REFINING COMPANY, Inc.

Titusville, Pennsylvania

Refinery Markets On Light Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

FOLLOWING are the average market prices on the more important petroleum products in cents per gallon f. o. b. in Oklahoma, Texas refinery and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Oct. 8	Prices Oct. 1	Prices Sept. 24
50-52 Naptha	10¾-11	10¾-11	11 -11¼
54 Naptha	11 -11¼	11 -11½	11½-11¾
58 Gasoline	11½-12	11¾-12	12 -12¼
60 Straight-run gasoline	12½-13	12¾-13	12½-13
62 Straight-run gasoline	13½-14	13½-14	13¾-14¼
64 Straight-run gasoline	14½-15	14¼-15	14¾-15
68 Straight-run gasoline	17¼-18	17 -18	17½-18½
68-70 Blend, 450 E. P.	11 -11¼	10¼-10½	11 -11¼
60-62 Blend, 450 E. P.	11¼-11½	10½-10¾	11 -11¼
62-64 Blend, 450 E. P.	11¾-11½	10½-10¾	11 -11¼
66-68 Blend, 440 E. P.	11¾-11½	10½-10¾	11¼-11½
68-70 Blend, 440 E. P.	11¾-11½	10½ 10¾	11¼-11½
68-70 Blend, 420 E. P.	11½-12	11 -11½	-11¾
OKLAHOMA			
48-50 450 E. P. naptha	6 - 6½	6 - 6¼	6 - 6¼
50-52 450 E. P. naptha	6¼- 6½	6 - 6½	6 - 6½
56-58 450 E. P. gasoline	6¼ 6½	6 - 6½	6 - 6½
55-57 (New Navy), 437 E.P.131i.b.p	6¼- 6½	6¼- 6½	6¼- 6½
58-60 (New Navy),437 E.P.131i.b.p.	6¼ 6¾	6½- 6¾	6½- 6¾
60-62 400 E. P. gasoline	8¼- 8½	8¼- 8½	8 - 8½
64-66 375 E. P. gasoline	9¼- 9½	9¼- 9½	9 - 9½
68-70 350 E. P. gasoline	10¾-11	10½-11	10½-11
NORTH TEXAS			
48-52 450 E. P. naptha	6¼- 6½	6 - 6½	6 - 6½
56-58 450 E. P. gasoline	6¼- 6½	6 - 6½	6 - 6½
56-58 New Navy gasoline	6½- 6¾	6¼- 6½	6¼- 6½
58-60 New Navy gasoline	6½- 6¾	6¾- 6¾	6¾- 6¾
60-62 400 E. P. gasoline	8¼- 8½	7¾- 8¼	7¾- 8¼
64-66 390 E. P. gasoline	9 - 9¼	8½- 9	8½- 9
64-66 375 E. P. gasoline	9¼- 9½	8¾- 9¼	8¾- 9¼
LOUISIANA-ARKANSAS			
51-53 460 E. P. naptha	6¼- 6¾	6¼- 6¾	6¼- 6¾
56-58 450 E. P. gasoline	6¼- 6¾	6¼- 6¾	6¼- 6¾
58-60 437 E. P. New Navy Gasoline	6¾- 7¼	6¾- 7	6¾- 7¼
64-66 400 E. P. Gasoline	8½- 8¾	8¼- 8¾	8¼- 8¾

NATURAL GASOLINE

OKLAHOMA	Prices Oct. 8	Prices Oct. 1	Prices Sept. 24
Grade A, 72-78 375 E. P., 90% Rec	7¾- 8¼	- 7¾	7¾- 7¾
Grade B, 76-82 375 E. P., 85% Rec.	7½- 8	7½- 7¾	7¼- 7½
Grade C, 80-88 350 E. P., 78% Rec.	7½- 7¾	- 7½	7 - 7¼
Grade D, 88-92 350 E. P.	7½- 7¾	- 7½	7 - 7¼
(Motor Natural Gasoline—Blends)			
Grade 1, 58-62 437 E.P., 91% Rec..	6½- 7	6½- 6¾	6½- 6¾
Grade 2, 58-62 450 E.P., 90% Rec..	6½- 7	6½- 6¾	6½- 6¾
Grade 3, 66-64 440 E.P., 88% Rec..	6¾- 7¼	6¾- 7	6¾- 7
Grade 4, 66-70 455 E.P., 85% Rec..	6¾- 7¼	6¾- 7	6¾- 7
NORTH TEXAS			
Grade A, 72-78 Absorption	7¾- 8¼	7½- 7¾	7¼- 7¾
Grade C, 80-88 Compression	7½- 7¾	7¼- 7½	7 - 7¼
(Motor Natural Gasoline—Blends)			
Grade 1, 58-62 437 E. P.	6½- 6¾	6¼- 6¾	6¼- 6¾
Grade 2, 58-62 450 E. P.	6½- 6¾	6¼- 6¾	6¼- 6¾

BURNING OILS

PENNSYLVANIA			
45 Water White	- 7¼	6¾- 7	6½- 7
46 Water White	7¾- 8	- 7½	7 - 7¼
47 Water White	8¼- 8½	7¾- 8¼	7¾- 8
300 Burning Oil	7½- 7¾	7½- 7¾	7 - 7½
OKLAHOMA			
41-43 Water White	3⅞- 4⅛	3⅞- 4⅛	3⅞- 4⅛
42-43 Water White	4 - 4¼	4 - 4¼	4⅛- 4¼
45-47 Distillate 520 E. P.	5½- 6	5½- 6	5½- 6
46-48 Distillate 500 E. P.	6 - 6½	6 - 6½	6 - 6½
NORTH TEXAS			
40-42 Prime White Distillate	3½- 3¾	3½- 3¼	3¼- 3½
41-43 Water White Kerosene	3¾- 4	3¾- 4	3¾- 4
LOUISIANA-ARKANSAS			
41-43 Water White Kerosene	4 - 4¼	4 - 4¼	4 - 4¼

(Prices of Lubricants and Heavy Oils are on page 101)

Chicago Refinery Market Active Near Close Of Week

CHICAGO, Oct. 6.—Tank car prices of kerosene were contrary this week in Chicago after the Standard Oil Co. of Indiana reduced the kerosene tank wagon price throughout its territory; they strengthened rather than weakened. There was also a distinct firming in the price of Navy gasoline due to the persistent demand for 7 cents a gallon by the stronger Mid-Continent refiners, and the gradual absorption of cheaper goods from the weaker holders. In several Chicago sales offices, the volume of business for this week was reported to be far in excess of demand for the preceding week.

Cutting the gasoline tank wagon price at scattered points in Standard of Indiana territory continued this week. These included St. Louis, Kansas City, Minneapolis and St. Paul. It was done to meet local competition in each case, and had no bearing on prices generally. The cut of 1½ cents in the kerosene price Thursday was uniform except in North Dakota where the reduction was irregular and went as deep as 2.1 cents in some places. This cut put the tank wagon price of refined oil back to a position more in line with gasoline.

Some refinery offices in Chicago virtually withdrew from the market at the beginning of the current gasoline price depression. There are quarters where a price below 8 cents never has been quoted, but of course sales at such prices have been few. For nearly two weeks, most of the Group 3 refiners have been holding out for 7 cents. Two weeks ago most orders were thus turned to refiners in distress and the bulk of sales were made at 6½ cents. That is not true any longer, however. Sales are being made now at 6¾ and 7 cents.

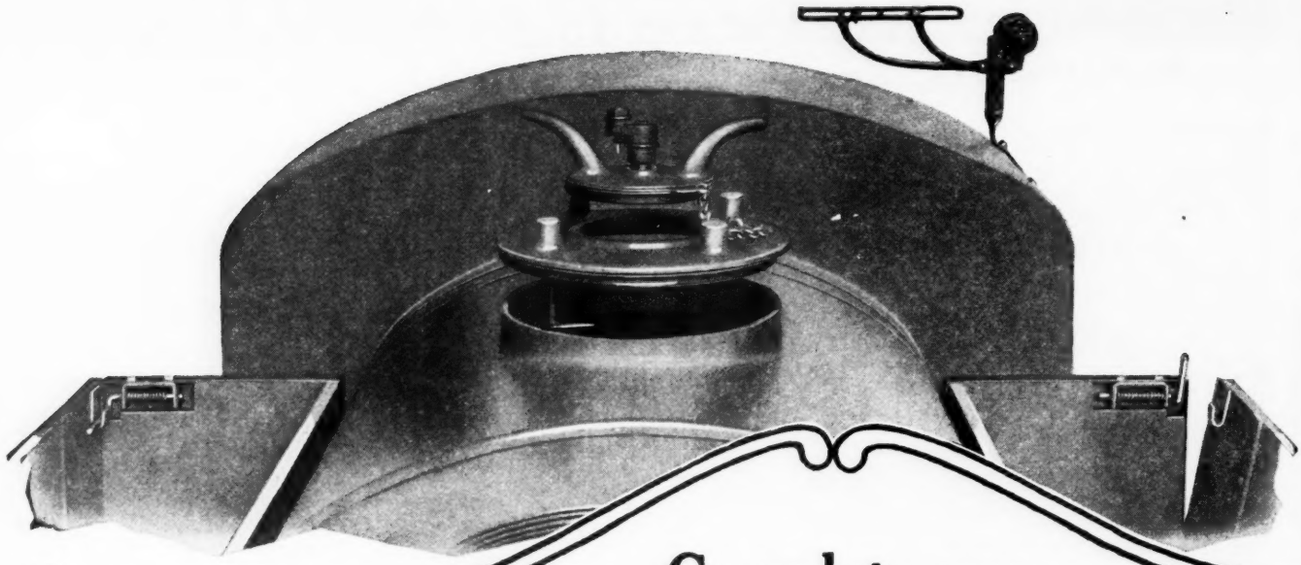
Gasoline of 56-58 gravity has about vanished from the sales sheets in this vicinity. Demand always grows slack toward the end of the touring season. This year, because of low price, 56-58 was used in tractors a great deal instead of kerosene, but jobbers in farming districts are mostly stocked up against further autumn plowing demand. All inquiries are for Navy gasoline or better. High gravity grades are in good demand and a little scarce. This scarcity also improved the market on Navy.

Kerosene is not quoted so generally at 4 cents a gallon in Chicago. Of course 4-cent kerosene can be had without much bearing down on the price, but the uniform 4-cent quotation which has prevailed for months is interrupted. Some refiners are asking 4½ cents and a great deal of water white is selling at 4¼. The boost in price reflects an actual scarcity of the product. While the tank wagon price was pushed down by gasoline, the tank car price was buoyed up by advancing distillate now increasing in demand as domestic fuel.

Household fuel still is about the most interesting item in the market. The product is different in almost every refinery office, dependent upon what the refiner is cutting and believes most of the jobbers will buy. It ranges between 37 straw distillate to a 42 prime white. In fact, some of it is a good grade of gas oil and some only an off-color kerosene. The prices quoted are also over a wide range, from 2⅞ to 3¾, with jobbers buying in accordance with the demands of their customers. To carry the figure further, the customers mostly are asking for what the burner salesman recommends.

Gas oil apparently is weaker, the price ranging from 2⅜ to 2½ and comparatively little changing hands at the higher price. The price of 2½ cents is paid, however, by small gas companies ordering small quantities and demanding quality products, as small plants almost invariably do.

The cool weather which enveloped Standard of Indiana territory early in the week is expected to strengthen demand for gas oil, but until Saturday morning it had not done so. The cool wave did bring in more fuel oil inquiries than usual.



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Modern Vehicle Company, San Francisco
Continental Body Co., Memphis, Tenn.
The McKenna Co., Cleveland
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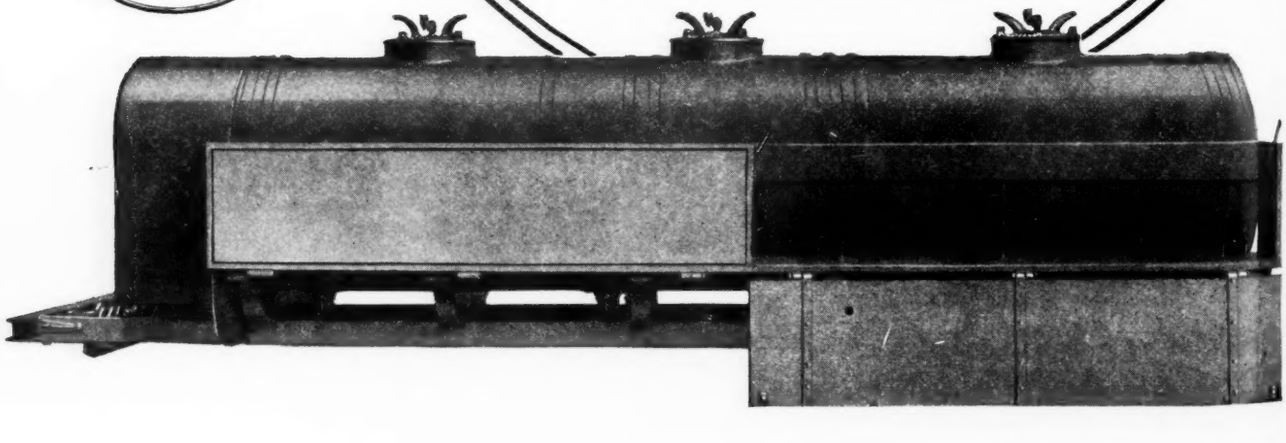

Refinery Markets On Lubricants, Heavy Oils

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

FOLLOWING are the average market prices on the more important petroleum products in cents per gallon f. o. b. in Oklahoma, Texas refinery and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

CYLINDER OILS

PENNSYLVANIA	Prices Oct.. 8	Prices Oct. 1	Prices Sept. 24
600 Steam Refined	-11	10½-11	10 -10½
635 Steam Refined	12½-13	-12½	-12
650 Steam Refined	13½-14	13 -13½	-13
600 Flash	16 -16½	-16	15½-16
600 Warren E	-16	15¾-16	15¾-16
600 Oil City E	-14	-14	13¾-14
600 Filtered D	20½-21	20 -21	20- 21
Cold Test Stocks (bright filtered)	33 -34	33 -34	33- 34
Cold Tests Stocks (dark filtered)	31 -32	31 -32	30 -31
Black Oil		-	- 6¼
OKLAHOMA			
Bright Filtered Stock	26 -33	26 -33	26 -33
Medium Filtered Stock	-17	-17	-17
600 Steamed Refined Olive Green	5½- 6½	5½- 6½	5½- 6½
600 Steam Refined Dark Green	4½- 5½	4½- 5½	4½- 5½
Black Oil	3½- 3¾	3½- 3¾	3½- 3¾

WAX

PENNSYLVANIA (Per Pound New York)			
122-124 White Crude Scale	- 3	- 3	- 3
124-126 White Crude Scale	- 3¼	- 3¼	- 3¼
OKLAHOMA (Per Pound Group 3)			
124-126 White Crude Scale	2⅝- 2¾	2⅝- 2¾	2⅝- 2¾

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	5½- 5⅞	5½- 6	5½- 5¾
30-34 Fuel Oil	5¼- 5½	- 5¼	- 5¼
OKLAHOMA			
40-42 Prime White Dist	3½- 3¾	.....	.....
38-40 Straw Distillate	3⅛- 3⅜	3 - 3¼	2¾- 3⅛
36-38 Straw Distillate	3⅞- 4⅛	2¾- 3	2⅝- 2⅞
32-36 Gas Oil (Gal.)	2⅜- 2½	2⅜- 2½	2⅜- 2½
24-26 Fuel Oil (bbl.)	80-85	82½-87½	.85- .90
Fuel Oil, buyers, cars (bbl.)	75-.80	.80-.85	82½-.87½
Road Oils 50-60 Asphaltic Content	.95-1.05	1.00-1.10	1.00-1.10
Road Oils 60-70 Asphaltic Content	1.05-1.15	1.10-1.20	1.10-1.20
NORTH TEXAS			
38-40 Straw Distillate	3 - 3¼	3 - 3¾	2¾- 3
32-36 Gas Oil (gal.)	2¼- 2½	2¼- 2½	2¼- 2½
24-26 Fuel, per bbl	.70-.80	.75-.80	77½-.82½
South Texas Fuel	1.15-1.25	1.15-1.25	1.15-1.25
South Texas Gas Oil	3½- 3¾	3 - 3½	3 - 3½
LOUISIANA-ARKANSAS			
34-36 Gas Oil (Gal.)	2¾- 3	2¾- 3	2½- 2¾
24-26 Fuel Oil (bbl.)	.75- .85	.80- .85	.80- .85

NEUTRAL OILS

PENNSYLVANIA	Prices Oct.. 8	Prices Oct. 1	Prices Sept. 24
(Viscous Test 70)			
200 Vis. No.3 Assoc. Filt	26 -27	26½-27	26½-27
180 Vis. No.3 Assoc. Filt	24 -25	24½-25	24 -25
150 Vis. No.3 Assoc. Filt	21 -22	21½-22	21 -22
(Non-Viscous)			
34 330-360 Flash	7¾- 8	7½- 8	7½- 8
36 Miners Neutrals 300-305 Flash	7¼- 7½	7 - 7½	7 - 7½
OKLAHOMA			
(Viscous Test 100)			
70 Vis. at 100°F. No. 2 color	4¼- 4½	4¼- 4½	4¼- 4½
70 Vis. at 100°F. No. 2½-3 color	4 - 4¼	4 - 4¼	4 - 4¼
100 Vis. at 100°F. No. 2 color	5 - 5½	5 - 5½	5 - 5½
100 Vis. at 100°F. No. 2½-3 color	4¾- 5	4¾- 5	4¾- 5
150 Vis. at 100°F. No. 3 color		11½-12	11½-12
150 Vis. at 100°F. No. 4 color		11 -11½	11 -11½
180 Vis. at 100°F. No. 3 color		14 -14½	14 -14½
180 Vis. at 100°F. No. 4 color		13¼-13¾	13¼-13¾
180 Vis. at 100°F. No. 5 color		12½-13	12½-13
180 Vis. at 100°F. No. 6 color		11¾-12¼	11¾-12¼
200 Vis. at 100°F. No. 3 color	15 -15½	15 -15½	15 -15½
200 Vis. at 100°F. No. 4 color		14¼-14¾	14¼-14¾
200 Vis. at 100°F. No. 5 color	13½-14	13½-14	13½-14
200 Vis. at 100°F. No. 6 color		12¾-13¼	12¾-13¼
220 Vis. at 100°F. No. 3 color		16 -16½	16 -16½
220 Vis. at 100°F. No. 4 color		15¼-15¾	15¼-15¾
220 Vis. at 100°F. No. 5 color		14½-15	14½-15
220 Vis. at 100°F. No. 6 color		13¾-14¼	13¾-14¼
240 Vis. at 100°F. No. 3 color	17 -17½	17 -17½	17 -17½
240 Vis. at 100°F. No. 4 color		16¼-16¾	16¼-16¾
240 Vis. at 100°F. No. 5 color	15½-16	15½-16	15½-16
240 Vis. at 100°F. No. 6 color		14¾-15¼	14¾-15¼
280 Vis. at 100°F. No. 3 color		19½-20	19½-20
280 Vis. at 100°F. No. 4 color	18½-19	18½-19	18½-19
280 Vis. at 100°F. No. 5 color		17½-18	17½-18
280 Vis. at 100°F. No. 6 color	16½-17	16½-17	16½-17
300 Vis. at 100°F. No. 6 color	17 -20	17 -20	17 -20
SOUTH TEXAS			
(Viscous Test 100; cold test 0)			
100 Vis. No.2 Color Unfilt. Pale	7 - 8	6 - 7	6 - 7
150 Vis. No.2½ Color Unfilt. Pale	9½-10½	9 -10	9 -10
200 Vis. No.3 Color Unfilt. Pale	10½-11½	10 -11	10 -11
300 Vis. No.3 Color Unfilt. Pale	13 -14	13 -14	13 -14
500 Vis. No.3½ Color Unfilt. Pale	15 -16	15 -16	15 -16
750 Vis. No.4 Color Unfilt. Pale	22 -23	22 -23	22 -23
200 Vis. No. 2 Filt. Pale	-22	-22	-22
300 Vis. No. 2 Color Filt. Pale	-24	-24	-24
500 Vis. No. 2½ Color Filt. Pale	-28	-28	-28
750 Vis. No. 2½ Color Filt. Pale	-37	-37	-37
200 Vis. No. 5½ Color Red Oil	9 -10	9 -10	9 -10
300 Vis. No. 5½ Color Red Oil	11 -12	11 -12	11 -12
500 Vis. No. 6 Color Red Oil	13½-15	13½-15	13½-15
750 Vis. No. 6 Color Red Oil	19½-20	19½-20	19½-20

Kerosene And Lubs Dominate Pennsylvania Markets

(Refinery market tables pp 99 and 101)

CLEVELAND, Oct. 8.—Kerosene and lubricating oil business is dominating the western Pennsylvania refinery market. This does not mean gasoline trade has fallen into the background but lubes and kerosene have been so active in the last few weeks that reserve stocks have been exhausted and some refiners can promise deliveries on new business only several weeks distant.

Kerosene prices have continued their forward movement started in September. While some 45 water-white may be picked up here and there at 7 cents, the stronger hands are holding firmly to 7¼. This is ¼ to ½ cent a gallon higher than a week ago with the season still young.

Fuel oil has been active but some refiners who had been holding for 6 cents on 36-40 last week were shading this figure an eighth today. For the 30-34 grade, product of cracking stills, prices ranged from 5¼ to 5½ cents whereas the middle of last week most refiners marketing this grade, demanded 5½ cents flat.

Steam refined stocks have been in heaviest demand of the lubricating oils. Prices have advanced over those of a week ago and supplies are scarce. There has been some buying for export and domestic requirements have improved since the end of summer.

Straight run gasoline has been a little slower with the exception of high test. Jobbers have been inquiring for contract figures for next year's requirements but it has been impossible to find instances of where contracts have been closed. Refiners are hesitant in view of conditions in the industry and prefer to wait a while to see how California production turns. Bureau of Mines statistics for August show a large accumulation of gasoline in California despite a curtailment of output. California refined gasoline and that produced from California crude by Atlantic seaboard refiners ruined the gasoline market for many Pennsylvania Independents during the summer.

Blended gasolines have been in better demand during the week and prices have taken a sharp turn upward from the slump that was evident a week ago. This is due mainly to the strength that has been shown by natural gasoline.

Viscous neutral oils continue somewhat spotty. Several refiners report having all the business they can handle while other say these oils are moving only slowly and that activity is not expected until compounders start making up their motor oils for the 1924 trade. Some firmness has been shown by the non-viscous neutrals because of a fairly good demand while supplies are low. Bright stocks have been steady. Wax is active and firm.

Kentucky

Kentucky gasoline has been moving steadily and prices for all grades are ¼ cent higher than a week ago, rallying from a small slump the middle of last week. High test grades have been active and most central Kentucky refiners are practically sold up on them. They report they are behind on shipments and won't have much to offer for some time. Prices in central Kentucky are: 58-60, 9 cents; 62-60 11½; 62-64, 12; 64-66, 12½; 66-68, 13, and 68-70 13½. At Louisville, Navy is selling at 9 to 9½ cents.

Kerosene buying continues to be heavy at 6¼ to 6½ central Kentucky. Gas and fuel oils are not strong, although some buying of the former has been done by gas companies.

CRANE PROGRESS
SIX NEW LINES

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For steam, water, oil and gas

Series 15	Series 25	Series 35
150 Steam	250 Steam	350 Steam
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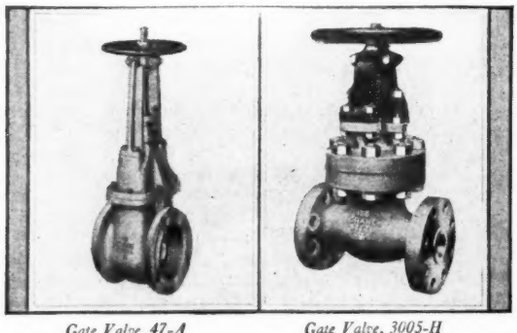
1000 Water	1500 Water	3000 Water

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

Branches and Sales Offices in One Hundred and Forty Cities
National Exhibit Rooms: Chicago, New York, Atlantic City
Works: Chicago, Bridgeport, Birmingham, Chattanooga and Trenton

CRANE, LIMITED, MONTREAL. CRANE-BENNETT, LTD., LONDON
CRANE EXPORT CORPORATION: NEW YORK, SAN FRANCISCO
CIE CRANE, PARIS



Gate Valve, 47-A
Series 15

Gate Valve, 3005-H
Series 150

Tank Wagon, Service Station Markets

Gasoline and Kerosene

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states the amount of the state taxes, the total tank wagon price with tax added in, and the service station or retail price of gasoline as quoted in the various Standard Oil marketing territories The right hand column is the tank wagon price of kerosene. By tank wagon price is meant the price to resale agents or dealers. Usually this price does not apply to sales to consumers from tank wagons.

Prices in Effect Oct. 8

S. O. NEW JERSEY TERRITORY

	Gasoline				Oil
	T.W.	Tax	Total	S.S.	T.W.
Atlantic City N. J.	18.5	0	18.5	*	13
Newark, N. J.	18.5	0	18.5	*	13
Annapolis, Md.	18	1	19	*	13
Baltimore, Md.	18	1	19	22	12
Cumberland, Md.	18	1	19	22	14
Washington, D. C.	18	0	18	21	12.5
Danville, Va.	18	3	21	*	14
Norfolk, Va.	17	3	20	22	12
Richmond, Va.	18	3	21	24	12.5
Roanoke, Va.	18	3	21	24	14
Petersburg, Va.	18	3	21	*	13.5
Charleston, W. Va.	18	2	20	23	12 5
Clarksburg, W. Va.	18	2	20	*	13.5
Keyser, W. Va.	18	2	20	*	14
Parkersburg, W. Va.	17	2	19	*	11
Wheeling, W. Va.	18	2	20	23	12.5
Williamson, W. Va.	19.5	2	21.5	*	14
Charlotte, N. C.	18	3	21	24	13.5
Hickory, N. C.	18.5	3	21.5	*	14
High Point, N. C.	18	3	21	*	14
Mt. Airy, N. C.	18	3	21	*	13.5
Salisbury, N. C.	18.5	3	21.5	*	14
Charleston, S. C.	16	3	19	22	11.5
Columbia, S. C.	18	3	21	23	13.5

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK TERRITORY

*New York City	18.5	0	18.5	21	14
Albany, N. Y.	17	0	17	19	13
Buffalo, N. Y.	16	0	16	18	14
Rochester, N. Y.	15	0	15	19	13
Syracuse, N. Y.	16	0	16	18	11
Boston, Mass.	18.5	0	18.5	21	12

*In steel barrels.

ATLANTIC REFINING TERRITORY

Pittsburgh, Pa.	18	0	18	23*	14
Philadelphia, Pa.	18	0	18	23*	14
Allentown, Pa.	18	0	18	23*	14
Scranton, Pa.	17	0	17	22*	14
Dover, Del.	18	1	19	22	14
Wilmington, Del.	18	1	19	22	14
Providence, R. I.	18.5	0	18.5	21	14
Springfield, Mass.	18 5	0	18 5	21	14
Worcester, Mass.	18 5	0	18 5	21	14
Hartford, Conn.	18 5	1	19.5	22	14
New Haven, Conn.	18.5	1	19.5	22	14
Boston, Mass.	18.5	0	18.5	21	14

Last six cities are Atlantic's chief marketing points in New England. S. O. New York markets there also.

*Contains 2-cent tax collected by dealer and paid by him directly to state.

S. O. OHIO TERRITORY

All Ohio points	17	0	17	19	13

S. O. KENTUCKY TERRITORY

Lexington, Ky.	16	1	17	19	14
Louisville, Ky.	15	1	16	18	13
Covington, Ky.	16	1	17	19	13
Clarksdale, Miss.	15	1	16	18	13
Jackson, Miss.	14	1	15	17	10
Natchez, Miss.	14.5	1	15.5	17.5	12.5
Vicksburg, Miss.	14.5	1	15.5	17.5	12.5
Birmingham, Ala.	16	2	18	20	14.5
Mobile, Ala.	15	2	17	19	13.5
Montgomery, Ala.	16	2	18	20	15
Atlanta, Ga.	17	3	20	22	15
Augusta, Ga.	17	3	20	22	14
Macon, Ga.	17	3	20	22	14.5
Savannah, Ga.	15	3	18	20	13
Jacksonville, Fla.	15	3	18	20	13
Miami, Fla.	17	3	20	22	14.5
Tampa, Fla.	15	3	18	20	13
Pensacola, Fla.	15	3	18	20	13.5

S. O. CALIFORNIA TERRITORY

Phoenix, Ariz.	16	3	19	22	21.5
Los Angeles, Cal.	10	2	12	15	15.5
Fresno, Cal.	11.5	2	13.5	16.5	17 5
San Francisco, Cal.	11	2	13	16	15 5
Reno, Nev.	14.5	2	16.5	19.5	19
Portland, Ore.	12	3	15	18	16 5
Seattle, Wash.	12	1	13	16	16 5
Spokane, Wash.	16	1	17	20	20 5
Tacoma, Wash.	12	1	13	16	16.5

S. O. LOUISIANA TERRITORY

	Gasoline				Oil
	T.W.	Tax	Total	S.S.	T.W.
Camden, Ark.	14.5	3	17.5	20.5	12
Little Rock, Ark.	14.5	3	17.5	20.5	12
West Helena, Ark.	14 5	3	17.5	20.5	12
Alexandria, La.	13.5	1	14.5	17.5	12
Baton Rouge, La.	12	1	13	16	10.5
Lake Charles, La.	13.5	1	14.5	17.5	12
New Orleans, La.	12.5	1	13.5	16.5	11
Shreveport, La.	13.5	1	14.5	17.5	12
Bristol, Tenn.	16	2	18	21	14.5
Chattanooga, Tenn.	14.5	2	16.5	19.5	13.5
Knoxville, Tenn.	15.5	2	17.5	20.5	14
Nashville, Tenn.	14.5	2	16.5	19.5	13.5
Memphis, Tenn.	14	2	16	19	13

MAGNOLIA PETROLEUM TERRITORY

Muskogee, Okla.	11	1	12	16	9
Oklahoma City	13	1	14	16	9
Tulsa, Okla.	10	1	11	14	9
Fort Smith, Ark.	12.5	3	15.5	18.5	11
Little Rock, Ark.	14	3	17	20	12
Texarkana, Ark.	14	3	17	20	11
Dallas, Tex.	6	1	7	10	10
El Paso, Tex.	11	1	12	17	12
Fort Worth, Tex.	6	1	7	10	10
Houston, Tex.	14	1	15	18	11
San Antonio, Tex.	9	1	10	13	11

S. O. INDIANA TERRITORY

Chicago, Ill.	13.4	0	13.4	15.4	10
Decatur, Ill.	14.2	0	14.2	16.2	10.5
East St. Louis, Ill.	12.85	0	12.85	15 1	9.6
Joliet, Ill.	13.4	0	13.4	15.4	10.7
Peoria, Ill.	14.2	0	14.2	16.2	10.5
Quincy, Ill.	14	0	14	16	10.3
Evansville, Ind.	14	2	16	18	10.5
Indianapolis, Ind.	14.2	2	16.2	18.2	10.7
South Bend, Ind.	14.4	2	16.4	18.4	10.9
Detroit, Mich.	12.8	0	12.8	14.8	11.2
Grand Rapids, Mich.	14 7	0	14.7	16.7	11 1
Saginaw, Mich.	14.9	0	14.9	16.9	11 3
La Crosse, Wis.	15.2	0	15.2	17 2	11.4
Madison, Wis.	14.3	0	14.3	16.3	10.5
Milwaukee, Wis.	14	0	14	16	10.2
Duluth, Minn.	15.2	0	15.2	17.2	11.6
Mankato, Minn.	14 8	0	14.8	16.8	11.4
Minneapolis, Minn.	12.9	0	12.9	14.9	11 6
Davenport, Ia.	14.5	0	14.5	16.5	10 9
Des Moines, Ia.	12.5	0	12.5	14.5	10.9
Sioux City, Ia.	14	0	14	16	10.5
Kansas City, Mo.*	11.9	1	12.9	14.9	9.3
St. Joseph, Mo.**	13 8	.5	14 3	16 3	10 2
St. Louis, Mo.	12 1	0	12 1	14 4	10
Fargo, N. D.	15 6	1	16 6	18 6	13.6
Grand Forks, N. D.	17 6	1	18 6	20.6	13 9
Minot, N. D.	19.4	1	20 4	22 4	13.6
Huron, S. D.	14	2	16	16	12 1
Pierre, S. D.	14	2	16	16	12 1
Wichita, Kan.	13.8	0	13.8	15 8	9 8
Bartlesville, Okla.	12.9	1	13.9	15.9	8.9

*Kansas City tax of 1 cent imposed by city.
**St. Joseph tax of ½ cent imposed by city.

S. O. NEBRASKA TERRITORY

Crawford, Neb.	15	0	15	*	13
Omaha, Neb.	14.25	0	14.25	16.25	11 75

*Standard has no service station here.

CONTINENTAL OIL TERRITORY

Denver, Colo.	15	2	17	19	13
Glenwood Sp'gs, Colo.	19	2	21		17.5
Pueblo, Colo.	15	2	17	19	13.5
Basin, Wyo.	15	1	16		14
Casper, Wyo.	13	1	14	16	12
Cheyenne, Wyo.	14.5	1	15.5	17.5	14
Cody, Wyo.	16	1	17	*	15
Lander, Wyo.	15	1	16	*	14
Billings, Mont.	17.5	2	19.5	21.5	15.5
Butte, Mont.	19	2	21	23	16
Great Falls, Mont.	19	2	21	23	17
Helena, Mont.	19	2	21	23	17
Miles City, Mont.	18.5	2	20.5	22.5	16.5
Ogden, Utah	19.5	2.5	22	24	16.5
Salt Lake City, Utah	19.5	2.5	22	24	16 5
Boise, Ida.	18	2	20	22	19
Albuquerque, N. M.	17	1	18	20	15 5

*Continental has no service stations at these points.

Week's Price Changes, Tank Wagon Markets

CHICAGO, Oct. 5.—Changing the kerosene price for the first time since July 19, 1922, Standard Oil Co. of Indiana made a general reduction of 1.5 cents in the tank wagon price of refined oil on Oct. 4 uniformly effective in the states wherein the company markets, except North Dakota. Changes in North Dakota were irregular, running as high as 2.1 cents at some points. This is the longest standing tank wagon market on record.

On the same day the tank wagon price of gasoline was reduced 1 cent in Kansas City and 1½ cents in St. Louis. The day before, Oct. 3, the gasoline tank wagon price was cut 2 cents in Minneapolis and St. Paul. The gasoline cuts were made to meet local price conditions.

ROCHESTER, N. Y., Oct. 6.—Standard Oil Co. of New York is maintaining a 4-cent margin on gasoline at the pump in Rochester. The price of Socony is 19 cents but other stations are selling at 17 cents, service station, except Kendall which is held at 20. Service station prices declined 1 cent Oct. 2 in accordance with the prevailing custom here not to change pump prices until three days after tank wagon changes.

TULSA, Oct. 8.—Gasoline price changes in Magnolia Petroleum Co. territory last week are: Oct. 2 San Antonio tank wagon and service station reduced 4 cents each; Oct. 4, El Paso tank wagon reduced 4 cents, service station 2 cents; Oct. 2, Tulsa, tank wagon, reduced 1 cent, service station 3 cents; Oct. 4, Fort Smith, both cut ½ cent, and Oct. 6 at Dallas and Fort Worth tank wagon only cut 1 cent.

LOUISVILLE, KY., Oct. 8.—Standard Oil Co. of Kentucky reduced gasoline 1 cent Oct. 6 throughout Kentucky and gasoline and kerosene 1 cent each at Jackson, Miss.

Miss Adair Quitting Akin

TULSA, Oct. 6.—Mrs. Sam Riddle, who has been in the sales department of the Akin Gasoline Co. for five years, has resigned and will quit selling gasoline to begin fulltime housekeeping on Nov. 1.

There are very few in refining and marketing circles in Tulsa who know Mrs. Riddle by that name. Although she has been married to Sam Riddle, drilling contractor, for more than a year she is still known in marketing circles as Miss Adair. Even those in the Akin offices address her by her maiden name and none of the refiners or manufacturers of natural gasoline in Oklahoma, Kansas and Texas has ever called on the telephone for Mrs. Riddle. She is Miss Adair to them and will be until she books her last order on Oct. 31, and retires from business.

When Miss Adair began her duties with the Akin company five years ago she was sales manager, traffic manager, billing clerk and credit manager. As the organization has grown she has continued with the sales work by which she has been fascinated.

Export Lube Demand Improves; Gasoline And Kerosene Quiet

By Special Correspondent
NEW YORK, Oct. 8

EXPORT demand for petroleum products was a little more active last week with interest centered on the lubricating oils, a good deal of the demand for which is credited to French buyers. One local factor reported the sale of 25,000 barrels of Pennsylvania steam refined and filtered stock during the last eight days, Pennsylvania 600 s. r. although still quoted at 18 cents in barrels New York is scarce at this figure and as much as 18 cents is asked by local distributors and refiners. Rumors were current of a cargo of assorted lubricating oils, totaling 35,000 barrels, which was supposed to have been sold by a leading Independent to a German house, but confirmation was lacking. The demand for western 600 s. r. was poor and the price was nominally quoted at 16 cents in barrels, New York.

While lubricating oils have shown increased activity gasoline was dull, and only one cargo sale was heard of. It was persistently rumored that The Texas Co. had secured cargo space at the Gulf for the shipment of 200,000 cases of gasoline and kerosene to Australia and New Zealand, this month. Other factors report that the longshoremen's strike at New Orleans is interfering greatly with business, as they are unable to promise delivery at any particular time.

Gasoline prices remained weak, and reports from abroad state that one of the leading United States refiners is offering new Navy at 8 cents and 64-66 at 11 cents for shipment from the Gulf, but foreign buyers are showing little or no interest even at these low figures.

One of the big Independents succeeded in disposing of a cargo of 45,000 barrels of 64-66, 375 end point, at 11 cents Gulf. Stocks of gasoline locally are of generous proportions and holders seem more inclined to press sales. Cased gasoline is dull.

Kerosene

Kerosene was easier in tone, but refiners were not inclined to press sales. Prime white was offered at 4⅞ cents and water white at 5¼ cents Gulf but buyers declared these prices to be too high, and no business was reported. The export prices as quoted by the leading refiners are nominally unchanged. Japanese and Chinese have been inquiring for cased kerosene in a fairly spirited way but no transactions of consequence were heard of. The bulk of the cased goods orders were confined to from 500 to 2000 cases. There were rumors of the sale of a cargo of prime and water white kerosene to a French buyer but confirmation was lacking. Stocks of kerosene abroad while not large, appear to be capable of taking care of nearby requirements, and foreign consumers are reluctant to place any good sized orders until they are compelled to do so.

Bunker oil was cut 15 cents a barrel last week, and all of the leading refiners are asking $1.45 a barrel f. o. b. New York harbor refinery. The continued weakness in crude oil along with the disappointing demand for bunker oil is held responsible for the drop in price. Stocks of bunker oil are of fairly generous proportions and several local observers expressed the belief that the price will go to $1.25 before the bottom is reached. Comparatively little export buying was heard of last week. A few good sized inquiries came to light but actual orders were scarce.

Gas Oil Easier

Gas oil was easier. Local refiners have reduced the price of 36-40 to 4 cents a gallon in bulk at the refinery against the previous week's price of 4¼ cents a gallon. At the Gulf 26-28 is offered around freely at 2¾ cents with buyers showing little interest at this figure. It is intimated that on a firm bid this price could have been shaded a trifle. Continental European buyers have been inquiring for gas oil in a fairly active way but actual demand has been spasmodic and decidedly disappointing.

The waxes were in better demand but most sales were confined to from 25 to 50 tons and none of the large foreign buyers seemed inclined to purchase beyond nearby requirements.

Fully refined waxes are offered in a fair way, and British buyers were credited with some fair sized purchases. White crude scale waxes, however, were rather dull, although inquiries from Italy and England were numerous. The match waxes held up well under a better demand from Scandinavian match makers. Japanese buyers also seemed more inclined to purchase the match waxes.

Medicinal oils were quiet and prices were more or less nominal. The call for petrolatums is more active. Snow white is held at 12 cents for good descriptions although inferior grades are still available at 11½ cents. Lily white is held at 9½ cents and not much is available below this figure at the present time. Other grades of petrolatums were dull and unchanged.

British Importations

Importations of petroleum into the United Kingdom during the week ended Sept. 17 were light, amounting to but 16,185,370 gallons. Larger receipts at London included 412,500 gallons of kerosene to the United Caucasian Oil Co., Ltd., from Port Arthur. The Shell Marketing Co. received the following shipments: 2,128,460 gallons of fuel oil from Tampico; 1,167,320 gallons of gasoline from Philadelphia and 252,100 gallons of gas oil from Rotterdam. Anglo-American Oil Co., Ltd., received 669,410 gallons of kerosene, 429,890 gallons of lubricating oil, and 209,100 gallons of fuel oil, all from Philadelphia. Pilot Trading Co. received 281,900 gallons of gasoline from Dantzig.

Only sizable arrival at Liverpool was 1,241,020 gallons of fuel oil from Tampico to the Shell Marketing Co. At Barrow, the same company received 400,840 gallons of fuel oil from Tampico. At Bristol the Anglo-American Oil Co., Ltd., received 324,470 gallons of fuel oil from Baton Rouge. The only large arrival at Dartmouth was 1,690,000 gallons of fuel oil to the Anglo American Oil Co. from Baton Rouge. At Hull, Anglo Mexican Petroleum Co. received 720,280 gallons of gasoline and 213,000 gallons of kerosene from Tampico.

At Manchester the Anglo American Oil Co. received 711,750 gallons of fuel oil from Baton Rouge, while at Plymouth this company received 1,345,120 gallons of kerosene from Philadelphia. At Swansea the National Oil Refineries Ltd. received 2,546,620 gallons of crude oil from Abadan. At Granton, Shell-Mex, Ltd., received 214,010 gallons of gasoline from Balik Pappan.

CASPER, Oct. 5.—The Casper plant of the Standard Oil Co. of Indiana shipped 13 solid trainloads of gasoline in September for export. This means in round figures 7,878,000 gallons requiring something like 780 cars, and is in addition to the regular shipments for domestic consumption.

NEW YORK, Oct. 6.—L. S. Tainter, agent for Ernest Schliemann's Oelwerke of Hamburg, is now offering Russian medicinal white oils to the domestic trade.

New York Market

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican crude transported from Tampico to the refinery by tanker and from California crude.

	Oct. 8
*Gasoline (New Navy) gal., Tank Cars	11½
‡Bunker oil (F.O.B.New York) bbl.	1.45
Gas Oil (36-40 refinery) gal.	.04
†Kerosene, 45-150 W.W.Bulk Del.,N.Y.nom.	.06

*Delivered.
†Nominal.
‡Plus .06½ charge lighterage.

Export Markets

Furnished to N. Y. Produce Exchange by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils

	Oct.. 8	Oct. 1
Bulk, gal., Bayonne	5.50	5.50
Barrels, gal., Bayonne, cargo	12.50	12.50
Cases, gal., Bayonne	15.40	15.40

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha
(Cents per Gallon)

U. S. Navy, dead bulk	12.00	12.00
U. S. Navy, cases	25.65	25.65
Export grade, bulk	13.00	13.00
63-66 deg. bulk	15.00	15.00
63-68 deg. bulk	16.50	16.50

Tide Water Oil Company
(f. o. b. Bayonne)

59-60 deg. bulk	13.00	13.00
59-61 deg. cases	25.65	25.65
Export grade, Navy Specifications bulk	12.00	12.00
63-65 deg. bulk	15.00	15.00
68-72 deg. bulk	17.50	17.50

	Bulk	Barrels	Cases
Standard white 110	5.50	12.50	15.40
Water white 150	6.50	13.50	16.40

The Texas Company

Gasoline, cases		25.65	25.65
Kerosene	**Bulk**	**Barrels**	**Cases**
Standard White	5.50	12.50	15.40
Prime White	6.00	13.00	15.90
Water White	6.50	13.50	16.40

Linseed Oil Higher; Chemicals Spotty

By Special Correspondent

NEW YORK, Oct. 8.—Linseed oil was advanced 4 cents a gallon last week by leading domestic crushers, owing to the sharp upturn in flaxseed. The crushing element looks for continued strength for the rest of the year. On the other hand consumers believe that the bulge in seed as well as in oil is not entirely justified, and are limiting purchases to small quantities capable of taking care of current requirements. Spot raw oil in carlots cooperage basis is now held at 95 cents a gallon while October is quoted at 94 cents. November-December is held at 92 cents and January-May at 90 cents. There is little or no interest in either spot or the future positions. The bulk of the activity last week, was confined to the filling of standing orders.

Soya bean oil was held at 9½ cents a gallon in tank cars on spot while on the coast the price was 9 cents. Buyers showed little in the market at these figures.

The animal oils were slightly lower reflecting the trend in tallow. Buyers of animal oils are not inclined to purchase freely and trade was largely of a hand-to-mouth nature. Stearic acid and the red oils were also a trifle lower. Red oil is offered freely at 9½ cents, against the previous week's 9¾ cents. Neatsfoot oil is tending lower. Degras is steadier but trade was sluggish throughout the week.

The fish oils were firm. Offerings of light pressed menhaden oil have been more restricted. The price is held at 65 cents. The fishing season has been poor and sellers of crude menhaden oil are asking 47½ to 50 cents a gallon in tanks at the factory but buyers are reluctant to pay these prices. Cod oil is also higher, while there is a little more animation in both whale and sperm oil although business in general was rather light.

Demand for caustic soda was more active. Although most of the larger buyers seem to be more inclined to purchase ahead, they are slow in placing contracts. Prices were well maintained. Soda ash light was quiet and prices steady. Stocks on hand are of moderate proportions. Sulfuric acid was quiet and easy. Bleaching powder was dull and unchanged at $1.35 a hundred.

Naval stores were somewhat easier, reflecting the trend in the southern markets. Spirits of turpentine in barrels, ex yard, closed at 98 cents a gallon on Saturday. Buyers seemed more inclined to hold off and no sizable purchases either for domestic or export account came to light during the entire week. There is a much better inquiry for the rosins but demand was poor and prices weak. Stocks on hand while not large are fully capable of taking care of current requirements.

TULSA, Oct. 6.—Lloyd M. Wyatt was made traffic manager of the Akin Gasoline Co. this week. Mr. Wyatt was at one time traffic manager for the Chesnut & Smith Corp. and before that was an assistant in the traffic department of Cosden & Co. Recently he has been in Arkansas engaged in leasing.

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective this date

		Oct. 8	Oct. 1
***Benzol**			
Pure Water White, Tanks	gal.	—.27	$—.27
Drums	gal.	—.32	—.32
90%..... Tanks	gal.	—.25	—.25
Drums	gal.	—.30	—.30
Refiners' Supplies			
Soda Ash light 58%...	cwt.	$1.45-1.75	$1.75-2.10
Silicate of Soda 60 deg....	Bbls.....cwt.	-2.00	-2.00
Sal. Soda wks.....	cwt.	1 10-1.30	1.10-1.30
Caustic Soda 76%...	cwt.	3.16-3.30	3.16-3.30
Chloride of Lime solid	cwt.	-1 50	1.35-1.50
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....	per ton	9.00-11.00	9.00-11.00
Jobbers' Supplies (Open Market)			
Vegetable Oils—			
*Linseed, carloads Spot	gal.	- .95	-.91
October	gal.	- .94	-.90
Nov.-Dec	gal.	- .92	.89
Jan. Forwards		- .90	.88
Less carload Spot	gal.	- .98	-.94
5 Bbls. or less Spot	gal.	-1.01	.95-.98
Boiled, tank Spot	gal.	- .91	.87
Boiled, carloads Spot	gal.	- .97	-.93
Soya Bean Spot, Tanks	lb.	-09½	.09¼-.09½
Animal Oils—			
English Degras	lb.	$-.04¾	$-.03¾
Domestic Degras, bbls. carloads	lb.	-.04	-.04
Horse	lb.	-.08	-.08
Oleic Acid—			
Dist	lb.	-.09½	-.09¾
Saponified	lb.	-.09½	-.09¾
Lard Oils—			
Prime Winter Strained . 1 to 1½ffa	40/45c.t.lb.	$.15¼	$.16
Extra Winter Strained . 2 to 4½ffa	40/15c.t.lb.	.13¼	.13¾
Extra..... 4 to 5 ffa	40/45c.t.lb.	.12¾	.13¼
Extra No. 1..... 7 to 10 ffa	40/50c.t.lb.	.11	.11½
No. 1.....15 to 18 ffa	40/45c.t.lb.	.10½	.11
No. 2.....22 to 25 ffa	40/45c.t.lb.	.10	.10½
Prime Edible Tallow under 1¾ ffa. 40/45c.t. N. Y.	lb.	-.09	.09½
Tallow acidless	lb.	-.11½	.12¼
Lard Stearine	lb.	-.16	.15¾
Oleo Stearine	lb.	.13	.13
Neatsfoot Oil—			
Pure	bbls.-lb.	13¾	14¼
Extra	do lb.	11	11½
No. 1	do lb.	10½	11
Cold pressed	lb.	16¾	17¼
Fish Oils—			
Menhaden Oil Light pressed	gal.	$.65-	-.65
White	gal.	-.60	.68-.70
Yellow bleached	gal.	-.67	-.67
*Herring, tank cars coast	gal.	-.40	-.40
Whale, extra winter bleached	gal.	.81	.81
Seal		Nominal	
Naval Stores—			
Turpentine, N. Y.	gal.	.98	1 00
Turpentine†	gal.	.92½	.92½
Rosin B. N. Y.	Bbl.	5.85	5.95
Rosin F. N. Y.	Bbl.	5.85	5.95
Rosin B.†	Bbl.	4.45	4.50
Rosin F.†	Bbl.	4.45	4.50
Rosin Oil 1st run	gal.	.42	.42
Rosin Oil 2nd. run	gal.	.48	.48
Pine Tar—			
Kiln Burnt	Bbl.	11.00	11.00
Retort	Bbl.	11.00	11.00

†Savannah, Ga., market.
‡Carlots.
*Nominal.

Mid-Continent Markets

(Continued from page 97)

the disturbed condition of the crude market, it is said. It is reported that their stocks are low and that they will find it necessary to keep in the market more or less constantly during the winter Generally speaking the heavy demand does not appear until about February or later.

Home heating distillates have continued to climb upward again this week as new orders have reached the field and stocks have been approaching depletion. The market is rapidly approaching the level of kerosene quotations. It is up a full ½ cent a gallon over the average for September.

One refiner announced today that he has determined virtually to eliminate his kerosene cut to care for the heating business. He will reach down deeper into the gas oil cut and blend that fraction with his low gravity kerosene to manufacture an acceptable heating distillate. He expects to sell the product over the winter at a price about equal to what he has been getting for a 40-42 water white kerosene recently.

In spite of a better demand and low supplies kerosene has not been bringing higher prices. The range on the two grades usually sold is from 3⅞ to 4¼ cents a gallon. The trade has been resisting all efforts to get a better price.

The action of the Standard Oil Co. of Indiana in reducing kerosene throughout its marketing territory came as a surprise here because of the apparent demand for the product and the low stage of reserves. It is generally believed that the chief reason for the reduction was that gasoline prices were so low that the two products were out of balance. At certain points gasoline was cheaper than kerosene. The cut did not appear to affect the tank car market.

Fuel Oil Quiet

With rather stiff competition from refiners in north Texas the Group 3 fuel oil market has been quiet this week again. Some Texas fuel is reported to be moving into Indiana territory on the basis of 77½ cents f.o.b. Oklahoma points. With even a little moving at that rate it has been difficult to sell at 82½ cents and above. Some sales have been made at 80 cents recently. Contract takings are large and no refiner is backing up any stocks worth mentioning but the condition of money is such that all goods must be turned over quickly.

Cleaning up odds and ends on road oils refiners have cut their prices on belated sales. The season will be closed in another week and some 40-50 oil is selling at 95 cents as refiners scrape their tank bottoms.

Fuel Oil Backing Up

SHREVEPORT, Oct. 6.—Fuel oil has been backing up to some extent at refineries in Arkansas and Louisiana with the result that there have been some reductions in price to stimulate buying. Fuel is available in Arkansas at around 75 cents a barrel.

Gasoline has been moving well. On hauls within the two states some Navy has been selling at 7¼ cents a gallon. The lowest quotations available are 6¾ cents.

Standard Gets Largest Bunker Oil Order

By Special Correspondent

WASHINGTON, Oct. 8.—The largest single company contract for fuel oil, in peace times, has been awarded to the Standard Oil Co. of New Jersey by the United States Shipping Board. It calls for deliveries not to exceed 1,065,000 barrels of fuel oil a month. The bid was an all or none affair, according to the announcement made by Edward P. Farley, chairman of the board. The contract covers the board's requirements at all Atlantic and Gulf ports during 1924. The board's announcement follows:

"The Standard's bid was lower at all ports than that of any combination that could have been made of other bids presented for deliveries at individual ports. In addition to that, in the Standard's bid, diminution in the source of supply does not excuse the bidder from performance of the contract. Some of the other bids were low at different points but this diminution clause would have excused them from performance of the contract. It was specified by the Standard that its bid should be accepted or rejected, as a whole, for supplying all the fuel oil requirements of the board for one year.

"The bids were opened for the delivery of 1,065,000 barrels of oil per month, divided as follows:

"Boston, 25,000; New York, 325,000; Philadelphia, 75,000; Baltimore, 85,000; Norfolk, 35,000; Charleston, 15,000; Savannah, 10,000; Jacksonville, 15,000; Tampa, 10,000; Mobile-Pensacola, 50,000; New Orleans, 150,000; Port Arthus, 20,000; Galveston-Houston, 150,000; Cristobal, 25,000; Balboa, 35,000; Sabine, Tex., 20,000; Magpetco, Tex., 20,000.

"The following bids were received:

"Magnolia Petroleum Co., $1.26 at terminal, Sabine, Tex.

"Sinclair Refining Co., $1.29 at terminal, $1.30 barge, New Orleans.

"Atlantic Refining Co., $1.36 terminal or barge, Philadelphia.

"Mexican Petroleum Co., $1.80 terminal, $1.85½ barge, Boston; $1.70 terminal, $1.76½ barge, Norfolk; $1.50 terminal, $1.56½ barge, Jacksonville; $1.40 terminal, $1.46½ barge, Tampa; $1.35 terminal, $1.41½ barge, New Orleans; $1.30 terminal at Galveston-Houston; $1.70 terminal, $1.64 cargo lots at bidder's storage.

"Swiftsure Petroleum Co., $1.17½ at terminal, Galveston-Houston.

"The Texas Co., $1.47½ terminal, Charleston and Savannah; $1.47½ terminal, $1.54 barge, Jacksonville; $1.47½ terminal, $1.50 barge, Tampa; $1.59½ barge, Port Tampa; $1.47½ terminal, Mobile and Pensacola; $1.54 barge, Mobile.

"Asiatic Petroleum Co., $1.55 f. a. s., New York; $1.08 f. o. b. New Orleans, $1.27 f. o. b New Orleans; $1.27½ o. o. b., Galveston-Houston; $1.40 Cristobal; $1.30 cargo lots, c. i. f., Colon; $1.50 f. o. b., $1.40 cargo lots, c. i. f., Balboa.

"Standard Oil Co. of New Jersey—$1.39 terminal at New York, Philadelphia, Baltimore and Norfolk; $1.29 at Charleston, Savannah and Jacksonville; $1.19 at Tampa; $1.14½ at New Orleans, Port Arthur and Galveston-Houston."

Crude Oil Prices All Fields

EASTERN FIELDS

	1923 Oct. 8	1922 High		1922 Low		1921 High		1921 Low	
Bradford—Allegany	$2.75	Jan 1	$4.00	July 19	$3.00	Jan 1	$6.10	June 29	$2.25
Other Pennsylvania	2.50	Jan 1	4.00	July 19	3.00	Jan 1	6.10	June 29	2.25
Cabell	1.35	Jan 1	2.61	July 19	1.86	Jan 1	4.46	June 29	1.11
Corning	1.45	Jan 1	2.40	July 20	1.75	Jan 1	4.00	June 29	1.20
Somerset	1.25	Jan 1	2.40	July 19	1.65	Jan 1	4.50	June 29	1.00
Somerset Light	1.40	Jan 1	2.65	July 19	1.90	Jan 1	4.25	June 29	.90
Ragland	.75	Jan 1	1.25	July 19	1.00	Jan 1	2.60	June 29	.60

Somerset oil run on and after Oct 1, 1922, takes price of 6 cents higher than above quotation

CENTRAL STATES FIELDS

Wooster	$1.50	Jan 1	$2.70	Sept 21	$1.90	Jan 1	$4.95	June 27	$1.80
Lima	1.68	Jan 1	2.48	July 20	1.98	Jan 1	3.73	June 27	1.58
Indiana	1.48	Jan 1	2.28	July 20	1.78	Jan 1	3.63	June 27	1.38
Princeton	1.47	Jan 1	2.27	July 20	1.77	Jan 1	3.77	June 27	1.27
Lodi	1.50	Jan 1	2.70	July 20	1.90	Jan 1	4.00	June 27	1.80
Illinois	1.47	Jan 1	2.27	July 20	1.77	Jan 1	3.77	June 27	1.27
Waterloo, Ill	.95	Jan 1	1.75	July 20	1.25	Jan 1	1.75	June 27	.75
Plymouth	.85	Jan 1	1.65	July 20	1.15	Jan 1	3.48	June 27	.65
Canadian Petrolia	2.08	Jan 1	2.88	July 20	2.38	Jan 1	4 15	June 27	1.98
Western Ky	1.25	Jan 1	2.40	July 19	1.65	Dec 1	2.40	June 27	.58

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 33	.90	Currie	1.00
33-39 9	1.30	Mexia	1.00
40 and above	1.75	Powell	1.00

Magnolia's Price Schedule

(Also adopted by Texas Co., and Empire, the latter as to Healdton only)

Under 28	.50	40 and above	1.75
28-30.9	.70	Corsicana, light*	1.00
31-32.9	.90	Corsicana, heavy	.50
33-39.9	1.30	Thrall	1.00

*Including Powell

NORTH LOUISIANA-ARKANSAS FIELDS

Caddo, 38 degrees and above	$1.25	El Dorado, below 33	1.10
do 35 to 37.9	1.15	Bull Bayou, 38 and above	1.15
do 32 to 34.9	1.10	do 35 to 37.9	1.05
do below 32	.75	do 32 to 34.9	1.00
Homer, 35 and above	1.25	De Soto	1.25
do 33 to 34.9	1.15	Crichton	.90
do 31 to 32.9	1.10	Bellevue	.75
do below 31	.75	Smackover, 26 and above	.75
Haynesville, 33 and above	1.10	25 to 25 9	.60
do below 33	1.00	24 to 24.9	.50
El Dorado, 33 and above	1.25	Below 24 Be	.40

GULF COASTAL FIELDS

	1923 Oct. 8	1922 High		1922 Low		1921 High		1921 Low	
Spindletop	$1 00	Jan 1	$1.25	Dec 30	$1.25	Jan 1	$2.50	June 13	$ .80
Goose Creek	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Goose Creek "B"	1.00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.70
Sour Lake	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Humble	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Batson	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Hull "A"	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Hull "B"	1 00	Jan 1	1.25	Dec 30	1 25	Jan 1	2.50	June 13	.80
West Columbia	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2 50	June 13	.80
Edgerly	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Vinton	1.00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80
Jennings	1 00	Jan 1	1.25	Dec 30	1.25	Jan 1	2 50	June 13	.80
Dayton	1.00	Jan 1	1.25	Dec 30	1 25	Jan 1	2.50	June 13	.80
Saratoga	1.00	Jan 1	1.25	Dec 30	1.25	Jan 1	2.50	June 13	.80

WYOMING FIELDS

Elk Basin	$1.35	Jan 1	$1.90	Aug 4	$1.20	Jan 1	$3.10	June 27	$1.00
Grass Creek	1.35	Jan 1	1.90	Aug 4	1.20	Jan 1	3.10	June 27	1.00
Big Muddy	.75	Jan 1	1.40	Aug. 4	.70	Jan 1	2.75	June 27	.50
Salt Creek	.90	Jan. 1	1.40	Aug. 4	.70	Jan. 1	2.75	June 27	.50
Lance Creek	1.20	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Rock Creek	.90	Jan. 1	1.50	Aug. 4	.80	Jan. 1	2.85	June 27	.60
Osage	1.35	Jan 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Cat Creek, Mont	1.35	Jan. 1	1.90	Aug 4	1.20	Jan. 1	3.10	June 27	1.00
Sunburst, Mont	.70								

CALIFORNIA

14-19.9	$ .60	25-25.9	.74	30-30.9	$ .89
10-20.9	.61	26-26.9	.77	31-31.9	.92
21-21.9	.62	27-27.9	.80	32-32.9	.95
22-22.9	.65	28-28.9	.83	33-33.9	.98
23-23.9	.68	29-29.9	.86	34-34.9	1.01
24-24.9	.71			35 and above	1.04

Gasoline Prices Higher In North Texas

(Refinery market tables pp 99 and 101)

WICHITA FALLS, Oct. 6.—Gasoline has shown advancing strength in the north Texas refinery market this week. All cheap Navy appears to have been eliminated and buyers of higher gravity goods have been forced to revise upwards their ideas of price.

The bottom price of Navy today appears to be 6⅛ cents. Refiners are so well sold up on the product that they are not finding it necessary to shade their prices ⅛ to absorb the freight differential over Group 3 on movements to Indiana territory.

The Sinclair Refining Co., eastern division, has completed additional purchases of export 64 for October shipment which takes care of most of the available supply for the next week or so. Prices on domestic high test gasoline have been advanced as inquiries have picked up coincident with the additional export business.

Natural gasolines are moving to eastern points at higher prices. Blenders are finding it increasingly difficult to do business although their high gravity products are now bringing a little better prices.

Heating distillates are active. Demand has reached down to this area from Group 3 and has driven prices well above 3 cents per gallon. Gas oil has not shown strength. Kerosene is active and the price well maintained although advances have not seemed possible this week.

Refiners are increasingly keen for fuel oil orders and have been shading their prices to get business. Some fuel is moving at as low as 70 cents a barrel. Demand has not been the most active in Indiana territory where new business is being sought.

Gloomy Autumn Weather For This Week

CHICAGO, Oct. 7.—Next week will be cloudy, according to the official forecast of the weather bureau. Temperatures will be normal for the season, but occasional showers will tend to discourage motoring. In the upper Mississippi and lower Missouri river valleys most of the rain will fall early in the week and the latter half will be cooler, says the prediction.

Standard Oil Co. of Indiana territory has had a dry week except in one state. But the first week in the month brought rain every day to Continental Oil territory, breaking over the eastern border into Kansas three consecutive days. During the first four days of last week a rain moved slowly southward across the country between the Rocky mountains and Mississippi river. Late in the week it broke up and there was precipitation around the lower lakes, in New England and the south Atlantic states.

September was cooler and cloudier than usual. Total rainfall was below normal but the rains were well distributed.

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OIL STOCKS and FINANCES

1922 Pipe Line Dividends Near $1,000 A Mile

By Special Correspondent

WASHINGTON, Oct 8.—The three dozen large pipe line companies of the country in 1922 paid dividends amounting almost exactly to $1,000 per mile of line operated. Their net income was a trifle more than that amount. Some paid dividends from surplus in part but most of them paid them from net income. The three dozen had in pipe line on which they achieved a net income of $58,567,686. They paid out in dividends $57,120,732, including the extra dividends by several of the Standard group.

Companies whose figures are included in the forgeoing summary, had an investment in pipe lines of $382,279,598. In other things their investment amounted to $264,343,603. The net income was earned from their operation as pipe lines. Earnings from "other investments" are included in these figures, which were promulgated by the Interstate Commerce Commission a few days ago.

The largest dividend was $7,200,000. It was paid by the Magnolia, which company, however, had an income of only about $6,500,000. Its investments in pipe lines was $26,707,794, while its other investments were slightly more than $200,000,000. The pipe line operating income of the company formed less than a sixth of the net income. The dividend rate of the Magnolia was 6 per cent.

Another large dividend, $5,130,000, was paid by the Prairie Pipe Line Co. In contrast with the Magnolia its dividend disbursement did not nearly approach the amount of the net income, which was $19,336,135. The Prairie had the largest investment in pipe lines; $74,750,000 in round figures, while its other investments were very small totaling only $7,725,000. Its dividend rate was 15 per cent and its income of $19,336,000 was practically all derived from its pipe line operations.

Among high dividend rates paid were 200 per cent by the Gulf Pipe Line Co. of Oklahoma, 112 per cent by the Cumberland Pipe Line Co., 95 per cent by the New York Transit Co. and 70 per cent by the Buckeye company. In none of these cases was the amount of dividend fully met by the net income, although in the case of the Cumberland a stock dividend accounted for the greater part of the disbursement which left the remainder, paid in cash, well within the amount of earnings. The Buckeye, which paid the 70 per cent dividend disbursed the second largest amount of money, $7,000,000. Somewhat less than a third of that amount was covered by the net income.

A rather strange looking case was that of the Gulf company, which paid a 60 per cent dividend of $2,100,000 although having a net deficit of $428,000. The pipe line operating income of the company, however, was $1,171,000. According to the figures reported for that company, the deficit, from other investments, which totaled only about $2,000,000, was more than $1,500,000.

The companies reported, with their net incomes, were: Buckeye, $2,013,000; Crescent, $182,000; Crude Oil Transit, $15,000; Cumberland, $716,000; Empire, $905,000; Eureka, $631,000; Gulf of Texas, deficit of $428,000; Gulf of Oklahoma, $1,607,000; Humble, $4,666,000; Humphreys Pure Oil, $714,000; Illinois, $2,809,000; Imperial, $119,000; Indian, $258,000; Indiana, $1,535,000; Magnolia, $6,472,000; Maryland, $58,000; National Transit, $1,330,000; New York Transit, $494,000; Northern, $457,000; Oklahoma, $806,000; Ozark, $1,680,000; Pierce, deficit, $139,000; Prairie, $19,336,000; Producers & Refiners, $8,000; Pure Oil, deficit, $466,000; Pure Oil of Pennsylvania, $95,000; Shreveport-El Dorado, $331,000; Sinclair, $4,498,000; Southwest Pennsylvania, $316,000; Southern, $928,000; Texas Pipe Line, $3,807,000; Texas of Oklahoma, $676,000; Tidewater, $1,191,000; Tuscarora, $1,022,000 and United States, deficit $71,000.

Financial Notes

Pacific Oil Co.—H. W. DeForest, E. P. Swenson and C. E. Seger were re-elected directors at annual meeting.

Shaffer Oil & Refining Co.—Regular dividend of 1¾ per cent on preferred stock passed for third quarter. Company announced it wished to conserve funds.

California Petroleum Corp.—$8,000,000 10-year 6½ per cent sinking fund gold notes admitted to New York Stock Exchange.

Associated Oil Co.—$10,244,275 additional capital stock admitted to New York Stock Exchange on official notice of issuance and payment in full.

General Petroleum Corp.—Reports that financing was being considered were denied by President John Barneson who says he believes none will be necessary.

Cities Service Refining Co.—Capital stock increased by authorizing issue of 74,000 additional shares of no par common and 50,000 shares of $100 par preferred. Previously only 1,000 shares of common had been issued.

Cleveland Stock Market

	Par Value	Oct. 5 Bid	Asked	1922 High	Low
National Refg	25	35	38	55	31¼
do pfd	100	123	130	128	118
Paragon Refg	25	5	6½	16¼	10¼
do pfd	100	59	70	80	75
Fred G. Clark Co	10	2	.....	11	6

Gulf's Stock Buying Plan Is In Force

PITTSBURGH, Oct. 6.—Gulf Oil Corp. on Oct. 1 put into effect an employe stock purchase plan under which its officers and employes and those of subsidiary companies may subscribe for Gulf stock up to 20 per cent of their salaries. The corporation will add 50 per cent to the amount any officer or employe contributes.

The price of the stock, to be fixed by directors quarterly, is not to be higher than the average market price for the preceding three months and in no case less than par, $25. If the market price is lower than the fixed price, stock may be bought in the open market. The plan is to be operative five years.

* * *

TULSA, Oct. 4.—Skelly Oil Co. stockholders at annual meeting Oct. 18 will vote on a proposed amendment to the charter to provide for sale of stocks to employes. W. G. Skelly in a letter to stockholders says there is a technical question whether the charter as it stands permits the carrying out of such a plan.

The amendment says: "Upon any issue for money of other consideration of any shares of the capital stock of the corporation which the corporation is now or may hereafter become authorized to issue by virtue of any increase of its capital stock by amendment of its certificate of incorporation, and upon any issue for money or other consideration of the debentures or other obligations of the corporation, the board of directors may, but need not, offer to stockholders such new stock, debentures or other obligations for purchase or subscription.

S. O. New York To Sell Stock To Employes

NEW YORK, Oct. 5.—Stockholders of the Standard Oil Co. of New York have approved an increase in the capital stock $10,000,000 to $235,000,000, or 9,400,000 shares of $25 par. Directors were authorized to issue all or part of stocks for sale to employes at prices to be fixed quarterly.

The plan is similar to that in force in other companies of the Standard group. Persons in employ of the company for one year or longer may subscribe for stock up to 20 per cent of their annual salaries and the company will add 50 per cent to whatever the employe contributes. The plan will continue for five years unless terminated sooner by the directors.

Board of directors was increased from nine to 11 by election of Theodore Pratt, New York, and William B. Walker, Hong Kong, China. A resolution enlarging the corporate powers and purposes was adopted and the time of the existence of the company was made perpetual. It originally was 50 years.

Transactions In Oil Shares On New York Stock Exchange

1922 High	1922 Low	1923 High	1923 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Oct. 5 Sales	First	High	Low	Last	Ch'ge
135½	91	134	98¼	$40,000,000	$100	Associated Oil	1½Q	July 25, 23	1,700	99½	108	99½	108	+ 9¾
.....	.....	25	27	40,000,000	25	do new	.....	.....	4,000	26¼	27	26¼	26⅞	+ 1⅜
1575	117	160	98¾	50,000,000	100	Atlantic Refining	$1Q	Sept. 15, 23	1,000	103	107	103	107	+ 4
119½	114	120	115	20,000,000	100	do pfd	1¾Q	Aug. 1, 23	100	117	117	117	117	0
56¼	19¾	35	9⅞	13,000,000	25	Barnsdall Corp. A	.62½	Apr. 30, 21	1,500	13⅜	14	13	13	+ 1
39	17	22	6⅜	3,713,275	25	do B	.62½	Apr. 30, 21	100	8	8	8	8	— 1
15¼	6¾	9⅛	1½	150,000	N.P.	Caddo Central O. & R	.....	.....	500	2	2	1¾	1⅞	— ⅛
71⅞	43⅛	29¾	17⅛	17,377,000	25	California Petroleum	4.33¾Q	Sept. 1, 23	31,800	18⅜	20⅝	18¼	20	+ 1
98½	83	110½	90½	12,989,500	100	do pfd	1¾Q	Oct. 1, 23	900	91	93¼	91	93	+ 2¼
54	31⅝	62¼	22¾	1,217,427	N.P.	Cosden & Co	$1Q	Aug. 1, 23	66,900	25¼	28⅛	25	27	+ 1½
102½	93½	109⅜	85	6,998,000	100	do pfd	1¾Q	Sept. 1, 23	200	89¾	90¾	89¾	90¾	+ 2¾
73¾	37¼	54	23	19,829,600	100	General Asphalt Co	.....	.....	8,400	28	31	28	30⅛	+ 1⅝
111	68½	83	60	7,416,100	100	do pfd	1½Q	Sept. 1, 23	600	61	63	61	63	+ 1½
78	45	50¼	40	3,236,600	100	Gilliland Oil Pfd	2	May 15, 21	.....	.....	.....	.....	.....	.....
91¾	61¼	78	40¾	25,000,000	100	Houston Oil Co	.....	.....	6,100	50	53¾	50	52½	+ 1½
.....	.....	11¼	3⅜	450,000	N.P.	Independent Oil & Gas	.....	.....	2,300	4⅞	5½	4⅞	5¼	+ ¼
25	12	19	1¼	5,000,000	25	Indiahoma Refining	‡.15	July 1, 21	400	2½	2½	2¼	2¼	0
11⅝	5¾	8½	2½	7,830,450	10	Indian Refining	.50	Dec. 15, 20	.....	.....	.....	.....	.....	.....
20¼	12½	19¼	8	672,180	N.P.	Invincible Oil	.....	.....	4,100	9⅛	9¾	9⅛	9⅛	— ⅛
3	¼	⅝	⅛	25,609,510	10	Island Oil & Trans	.....	.....	70,600	½	⅝	+ ⅛	¼	— ¼
7½	1½	3½	¼	14,662,890	10	Kansas & Gulf	.....	.....	700	⅜	⅜	¼	¼	0
.....	.....	22½	16	250,000	N.P.	Maracaibo Oil	.....	.....	700	19½	19½	18¼	18¼	— 1¼
46⅜	22⅝	59⅝	20¼	1,001,714	N.P.	Marland Oil Co	$1Q	July 1, 23	55,000	24⅝	26⅜	23½	26⅛	+ 1¾
322	106¾	293	182	46,942,800	100	Mexican Petroleum	4Q	July 20, 23	.....	.....	.....	.....	.....	.....
108	79¼	105¼	100¼	12,000,000	100	do pfd	2Q	July 20, 23	.....	.....	.....	.....	.....	.....
34½	14½	23¾	5¾	444,604	N.P.	Mexican Seaboard	.50Q	June 1, 23	6,200	9	10⅞	9	10⅞	+ 1½
32⅛	12	23¼	6	261,000	N.P.	do V. T. C	.50Q	June 1, 23	1,400	9	10	9	9	0
16	11	12¼	4¾	29,791,450	10	Middle States Oil	.30Q	July 1, 23	37,200	5	5⅝	4⅞	5½	+ ½
62	47	67	31	39,626,000	25	Ohio Fuel Supply	.56¼	July 14, 23	500	31	31	31	31	+ ¾
4⅜	1¾	3⅛	1¼	5,359,425	5	Oklahoma P. & R	2	Apr. 1, 21	1,500	1¼	1¾	1¼	1⅜	+ ⅛
69⅜	42½	48⅞	31¼	3,500,000	N.P.	Pacific Oil Co	$1SA	July 20, 23	76,700	36⅜	40⅝	35⅞	39⅜	+ 3⅜
100⅜	48⅞	93½	53	48,292,450	50	Pan-American P. & T	$2Q	July 20, 23	46,700	54¾	59½	54½	58⅝	+ 4⅝
95¾	44	86	50⅞	81,045,750	50	do B	$2Q	July 20, 23	75,600	53	57¼	52½	55¾	+ 3¾
12	3	6¼	1¾	198,770	N.P.	Panhandle P. & R	.....	.....	.....	.....	.....	.....	.....	.....
73	61	68	51	2,935,200	100	do pfd	2Q	July 2, 23	.....	.....	.....	.....	.....	.....
59¼	28¼	69⅝	19¾	1,183,282	N.P.	Phillips Petroleum	.50Q	Oct. 1, 23	26,000	23¾	26⅜	23½	25⅛	+ 1
12	4	6	1½	29,622,925	25	Pierce Oil Corp	.....	.....	1,700	2	2	1¾	1⅞	— ⅛
71	32	44½	18	15,000,000	100	do pfd	2	Feb. 1, 22	300	18	18	†18	18	— 2
51	24⅛	58⅛	20⅛	37,450,850	50	Producers & Refiners	50Q	Sept. 15, 23	55,000	23¾	25¾	23	23	— ½
49	36	49⅜	36	2,845,350	50	do pfd	87½Q	Aug. 6, 23	100	39	39	39	39	0
38⅝	26½	32	16¼	59,979,400	25	Pure Oil Co	37½Q	Sept. 1, 23	10,800	16⅞	17⅜	16⅞	17⅛	— ⅝
102¾	94	100	82½	13,000,000	100	do 8% pfd	2Q	Oct. 1, 23	200	86	86	86	86	— ½
67	47¼	55⅛	40½	(sh) 690,854	13.40	Royal Dutch, N. Y. shares	‡.15	Aug. 10	2,000	44	44	43¼	43½	— ¾
48½	34⅝	41¼	29⅛	(sh) 159,854	—1	Shell Transport	1.13½	July 26, 23	100	29⅛	29⅛	†29⅛	29⅛	— 2
13¾	12⅛	19¼	12⅜	8,000,000	N.P.	Shell Union	‡5Q	Sept. 29, 23	24,900	15¼	16⅜	15⅛	15¾	+ ½
96⅜	90	95	90	20,000,000	100	do pfd	1½Q	Aug. 15, 23	400	91	92	91	92	+ ½
.....	.....	16	6½	6,469,100	10	Simms Pet	.....	.....	4,500	7½	8⅛	7½	8	+ ½
38¾	18¾	39⅜	16	4,479,565	N.P.	Sinclair Consolidated	.50Q	Aug. 31, 23	72,500	17¾	19¾	17¾	18⅞	+ 1
102	97⅞	99⅜	80¼	19,640,000	100	do pfd	2Q	Aug. 15, 23	600	82⅛	83½	82	83½	+ 1
11⅞	8⅜	35	12⅛	20,576,690	25	Skelly Oil	.....	.....	19,200	14¾	17	14¾	16½	+ 1⅝
135	91¾	64⅛	47⅛	231,090,125	25	S. O. Caliofrnia	.50Q	Sept. 15, 23	43,900	15⅛	55½	51⅛	53½	+ 2
250½	169	44¼	30⅞	500,449,200	25	S. O. New Jersey	‡5Q	Sept. 15, 23	26,900	32½	34¼	32¼	34	+ 1¼
120	113⅜	118¼	114⅜	199,972,900	100	do pfd	1¾Q	Sept. 15, 23	600	116¼	116⅞	116¼	116¼	0
10¼	4	6¾	2	451,708	N.P.	Superior Oil	.50	Dec. 20, 20	4,200	2¼	2⅝	2¼	2¼	+ ¼
52¼	42	52⅞	39¼	164,450,000	25	The Texas Co	.75Q	Sept. 29, 23	24,800	41	42⅛	40⅜	41½	+ ¾
32⅜	18½	24¾	7	8,380,340	10	Tex. Pac. Coal & Oil	‡5Q	June 30, 23	6,700	8⅜	8¾	7⅝	7⅝	— ⅝
154	109¾	144	94	49,688,400	100	Tide Water Oil Co	2	Dec. 30, 21	800	101	104	101	103	+ 4
20½	7½	14½	3⅛	2,000,000	N.P.	Transcontinental Oil	.....	.....	16,000	3⅛	4	† 3⅛	3⅛	— ⅜
134¾	85⅞	99¾	81	19,000,000	100	Union Tank Car Co	1¼Q	Sept. 1, 23	.....	.....	.....	.....	.....	.....
113	102	114	106	12,000,000	100	do pfd	1¾Q	Sept. 1, 23	200	107	107½	107	107½	+ ⅛
34	25	30⅜	20⅛	460,000	N.P.	White Eagle Oil & Ref	.50Q	July 20, 23	2,400	21⅝	23¼	21⅝	22¾	+ ⅝
11⅜	2⅛	5⅞	⅜	959,046	N.P.	White Oil Corp	.....	.....	18,700	1⅜	1⅜	† ⅜	½	— ⅝

•New High †New Low ‡In Scrip xEx—Dividend Total Sales 866,900

Standard Oil Stock Traded In New York Curb Market

1922 High	1922 Low	1923 High	1923 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Oct. 5 Sales	First	High	Low	Last	Ch'ge
25	16⅝	19¾	13½	£3,000,000	£1	Anglo-American Oil	46½S.A.	May 15, 23	3,700	14⅜	15⅛	14⅜	14½	0
12½	4⅞	7⅝	2½	(sh)500,000	N.P.	Atlantic Lobos	.....	.....	100	3	3	3	3	+ ⅛
610	335	150	113	$ 1,000,000	100	Borne-Scrymser	4S.A.	April 16, 23	70	135	135	135	135	0
110	83	94½	77	10,000,000	50	Buckeye Pipe Line	$1.75 Q	Sept. 15, 23	275	80	80	79¾	79¾	— ¼
225	175	237	207	1,500,000	100	Chesebrough Mfg	3½ Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
113	104	.....	.....	1,000,000	100	do pfd	1¾Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
153	125	50	32½	10,000,000	25	Continental Oil	50 Q	Sept. 15, 23	200	37	38	37	38	+ 3
49	28	47½	15¾	1,500,000	25	Crescent Pipe Line	37½ Q	Sept. 15, 23	100	17	17	17	17	— ½
185	115	168	85	3,000,000	100	Cumberland Pipe Line	12A	Dec. 15, 23	30	107	107	106	106	— 2
103½	79½	117	95	5,000,000	100	Eureka Pipe Line	3Q	Aug. 1, 23	40	98	98	98	98	0
62	40	78	55	16,000,000	100	Galena Signal Oil	1Q	Sept. 29, 23	220	60	61	58½	61	+ ½
105	100	105	104	4,000,000	100	do new pfd	2Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
114	104	.....	.....	2,000,000	100	do old pfd	2Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
267	212½	41¼	28	43,750,000	25	Humble Oil & Ref	30Q	Oct. 1, 23	3,200	28⅝	31½	28½	30⅞	+ 2⅜
198	154	171	152	20,000,000	25	Illinois Pipe Line	8 S.A.	June 30, 23	95	153	156½	152	156	+ 4
130¾	97½	123	92	39,222,750	25	Imperial Oil, coupons	75 Q	Sept. 1, 23	2,180	98	101½	98	99½	+ 3½
111	84	103	83¾	5,000,000	50	Indiana Pipe Line	$2 Q	Aug. 15, 23	215	90	91	89⅞	90	0
27½	14	24⅞	13¼	(sh)7,188,138	N.P.	International Petroleum	25c	June 30, 23	37,700	15½	16⅞	15⅜	15⅞	+ 1⅜
259	150	168	123	180,000,000	100	Magnolia Petroleum	1Q	Oct. 5, 23	270	128	135	128	135	+ 7
31⅛	23	29	22½	6,362,500	12½	National Transit	50Q	Sept. 15, 23	700	24⅛	24⅛	23¼	23¼	0
214	117	137	92	5,000,000	100	New York Transit	3Q	April 15, 23	25	95	95	95	95	0
127	90	110	96	4,000,000	100	Northern Pipe Line	5 S.A.	July 1, 23	60	105	107	105	107	0
365	71	85½	48¾	60,000,000	25	Ohio Oil Co	3Q	Sept. 29, 23	2,700	53½	56½	53½	56⅜	+ 3⅝
44⅞	16	25½	10½	10,000,000	25	Penn-Mex Fuel	.....	.....	2,000	22	28½	21	27½	+ 8
750	520	700	152	54,000,000	100	Prairie Oil & Gas	2Q	July 31, 23	3,665	156½	174	156½	170½	+13½
325	224	335	93	81,000,000	100	Prairie Pipe Line	2Q	July 31, 23	1,200	98½	99½	98¼	99	0
405	340	212½	161	4,000,000	100	Solar Refining Co	5 S.A.	June 20, 23	90	174	180	174	179	+11
110	77	116	93	10,000,000	100	Southern Pipe Line	$2Q	Sept. 1, 23	45	94⅜	95	94	94	— 1
249	150	195	100	20,000,000	100	South Penn Oil	1½Q	Sept. 30, 22	260	120	122	120	122	+ 2
70½	50½	88¼	66⅜	3,500,000	100	Southwest Pa. Pipe Lines	2Q	Oct. 1, 23	40	81½	81½	81½	81½	— ½
135	58⅜	69⅞	49¼	220,181,638	25	S. O. Indiana	62½Q	Sept. 15, 23	124,600	53½	57¼	53⅜	56⅜	+ 2¾
690	41	57	36½	8,000,000	25	S. O. Kansas	50Q	Sept. 15, 23	1,300	38½	42⅛	38½	40¾	+ 2¾
131	76½	138	83	17,500,000	25	S. O. Kentucky	$1Q	Oct. 1, 23	3,000	89¾	93¾	89¾	93	+ 3¾
217	170	285	186	3,000,000	100	S. O. Nebraska	5 S. A.	Dec. 15, 22	10	220	220	220	220	+15
675	41⅜	495⅛	35⅛	225,000,000	25	S. O. New York	35Q	Sept. 15, 23	34,100	40¾	45¼	40½	42⅞	+ 1⅞
585	261	317	270	14,000,000	100	S. O. Ohio	2½Q	Oct. 1, 23	80	278	281	278	278	0
119½	113½	118	116	7,000,000	100	do pfd	1¾Q	Sept. 1, 23	100	118	118	118	118	+ 2
37	30	39	21	1,806,200	100	Swan & Finch	2½S.A.	Nov. 1, 19	30	24	24	23	23	— 2¼
710	36¼	55¼	40	60,000,000	25	Vacuum Oil Co	50Q	Sept. 20, 23	31,000	48⅜	51½	48⅜	49⅝	+ 1½
32	20	28	22	100,000	10	Washington Oil Co	20A	Jan. 31, 22	10	22	22	†22	22	— 1

Associated's Net Lower

SAN FRANCISCO, Oct. 4.—Associated Oil Co. for first six months report net profit of $2,253,072 after interest, federal taxes, depreciation and depletion equivalent to $1.41 a share on the $25 stock as compared with a net of $2,704,449 or $6.80 a share on the $100 stock in the first half of 1922. Consolidated income accounts for the two six-month periods compare:

	1923	1922
Net earnings	$4,613,048	$4,857,039
Taxes, interest ..	822,503	474,356
Net income	$3,790,545	$4,382,683
Deprec., deplet. ..	1,537,473	1,678,234
Net profit	$2,253,072	$2,704,449

Transcontinental Oil Co. of Colorado.—Incorporated in Delaware with a capital of $100,000, to take over the operations of parent company in Colorado. Officers and directors same as parent company. It has a large acreage in northwestern Colorado part of which is on the Hamilton dome, Moffatt county, where it is drilling a well jointly with the Texas Production Co. that recently showed considerable oil at 2020 feet.

Globe Oil Corp.—Special stockholders' meeting called at Denver to vote upon a proposal to authorize the directors to sell its assets, wind up its affairs and dissolve the corporation. Company was organized in 1921 and acquired 1300 acres on the Newkirk dome, Kay county, Okla., upon which it drilled a test well.

Oil Dividends

	Amount	Stock of Record	Payable
General Pet. q....	50c	Dec.15	Nov.30
Oil Lease Dev. m	10c	Oct.15	Sept.29
Ventura Cons. q...	50c	Nov. 1	Oct. 15

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CARL H. PFORZHEIMER & CO.

Specialists in Standard Oil and Miscellaneous oil securities

25 Broad St. New York

NEW YORK BONDS

Week Ended Oct. 6

	High	Low	Last	Ch'ge
Atlantic Ref. deb 5s...	97⅝	97	97⅜	+⅜
Barnsdall 8s.....	96½	96	96½	+½
Empire G. & F. 7½s..	92⅜	91¾	92⅜	+¾
Humble O. & R. 5½s..	96⅝	94¾	96⅝	+1½
Marland Oil 8s ser. A..	101¼	100	101	+1
Mex Pet of Del cvt 8s.	103½	103	103	0
Pan-Am Pet & T 7s...	104	102⅜	103	+⅜
Prod. & Ref. 8s.....	101⅝	101	101⅛	—⅛
Prod & Ref 8s with war.	109	108¼	109	0
Sinclair Cons cvt 7s...	94¼	93⅛	93½	—¼
do 6½s.....	86⅜	85⅜	86¾	0
Sinclair Crude 6s Ser B.	95⅞	94½	95⅞	+1⅜
Sinclair P L s f 5s.....	82¼	80¾	81¾	+1¼
Tidewater 6½s.....	103	102¾	103	+⅞
Union of Cal. 6s.....	100	99½	100	+½
Union Tk Car 7s.....	103¾	102¾	103	+¾

NEW YORK CURB BONDS

Week Ended Oct. 5

	High	Low	Last	Ch'ge
Anglo-Am.....	102¼	102	102	+⅛
Cities Serv 7s.....	106¼	106¼	106¼	—
Cities Serv 7sC reg....	89½	89	89	—⅜
Cities Serv 7s D.....	88¾	88	88¾	+¾
Galena S O 7s.....	103¼	103	103¼	—¾
Gen Asphalt 8s.....	101¾	101½	101½	+⅜
Gen Pet 6s.....	.....	.....	.....	.....
Gulf Oil 5s.....	94¾	94½	94½	—¼
S O N Y 7s '25.....	103	102⅝	103	+¾
do 7s '26.....	104¾	104⅛	104¼	—¼
do 7s '27.....	104½	104⅛	104½	0
do 7s '28.....	105	104½	105	+1
do 7s '29.....	107	106¾	107	0
do 7s '31.....	107¾	107¼	107½	+⅜
do 6½s.....	107	106⅜	106⅜	+⅜
Sun Oil 7s.....	101½	100¾	101½	+¾
do 6s.....	97¾	97¾	97⅞	—¾
Tidal Osage 6s.....	101¾	101	101	—½
Union Oil Prod 8s.....	83	81	82	+1
Vacuum Oil 7s.....	106	105¾	105¾	0

NEW YORK CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Oct. 5 Sales	First	High	Low	Last	Ch'ge
18	6¾	10	5	10	Ark. Nat. Gas.....	1,100	5⅛	5⅛	5	5	0
9¾	3¼	7⅝	3⅛	25c	Carib. Synd. ctf....	1,600	3¾	3¾	3½	3½	—⅛
242	158	193	129	100	Cities Service.....	1,080	130	131	129	130	—½
72	51	70	64	100	do pfd.....	4,900	66⅞	67	66½	67	+⅛
25½	16¾	19½	12¾	10	do bankers sh....	1,700	12⅞	13¼	12⅞	13	0
5	1¼	7⅞	1½	N. P.	Creole Syndicate...	14,900	1¾	2⅜	1⅝	2⅛	+¼
.....	.....	18¾	5¾	N. P.	Derby O. & R.....	200	6	6	†5¾	5¾	—⅝
2¼	.65	1	.35	5	Federal Oil.....	.....	.....	.....	.....	.....	.....
19½	8⅛	19¼	16½	N. P.	Fensland Oil.....	.....	.....	.....	.....	.....	.....
.....	.....	38	24	25	General Petroleum..	200	31⅛	31⅞	31⅛	31⅞	—⅛
9⅝	2⅝	7⅜	3	N. P.	Gilliland Oil.....	.....	.....	.....	.....	.....	.....
7¾	78	2⅛	.50	10	Glenrock Oil.....	1,000	.66	.73	.68	.70	+.05
71½	48½	68¼	45¾	25	Gulf Oil Corp.....	4,500	50⅞	52¼	50¼	52	+1
26½	2¼	4	1	N. P.	Kirby Petroleum...	300	2¼	2⅜	2¼	2⅜	+⅛
49¼	39⅞	58	45	N. P.	Mammoth A.....	.....	.....	.....	.....	.....	.....
10	1	5	1½	N. P.	Marland of Mexico.	1,000	3¾	3¾	3½	3½	—¼
19	9⅞	20¼	12⅞	10	Mountain Prod....	8,200	13¾	15½	13¾	14¾	+1
13⅜	5¾	15½	8¼	5	Mutual Oil Co.....	28,800	9⅛	9⅝	9⅛	9¼	+⅛
.....	.....	5¾	3½	5	New Bradford.....	8,400	4¼	4⅜	4	4⅜	+⅜
83	40	52	16	10	New Eng. Fuel Oil..	.....	.....	.....	.....	.....	.....
3	.67	1⅛	.50	10	Omar O. & G.....	3,900	.61	.63	.60	.60	—.01
.....	.....	13	.76	N. P.	Peer Oil Corp.....	1,360	.76	.95	.76	.87	—.03
9¾	4⅞	14¾	9⅜	10	Pennok Oil.....	2,600	11½	12	11½	11⅝	—⅜
14¾	10	15⅛	6¾	10	Salt Creek Cons....	500	7⅛	7½	7⅛	7½	+⅜
22	12⅛	25⅛	15½	10	Salt Creek Prod....	11,600	17¾	20⅛	17¾	18⅞	+1⅛
5	2⅜	4⅞	1	5	Sapulpa Refining...	2,100	1⅜	1⅝	1⅜	1⅝	+⅛
3⅛	.80	4	.80	5	Seaboard O. & G...	11,500	1	1⅛	†.80	1⅛	0
21	12¼	26⅝	11⅝	N. P.	Southern States....	63,300	15	15⅞	14¼	14⅜	—⅝
34	23	30	19	5	Ventura Cons.....	100	22	22	22	22	+3
7⅞	2¼	10⅞	4	5	Wilcox O. & G.....	4,100	4⅜	4½	4⅜	4⅜	—⅛

PITTSBURGH STOCK EXCHANGE

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Oct. 5 Sales	First	High	Low	Last	Ch'ge
12⅝	8¼	10	5	10	Arkansas Nat. Gas	1,780	5⅛	5⅛	5	5	—⅛
55½	21	.....	.....	25	Barnsdall Corp. A..	.....	.....	.....	.....	.....	.....
38½	20	.....	.....	25	do B.....	.....	.....	.....	.....	.....	.....
112¾	64½	112½	83⅜	100	Columbia Gas.....	.....	.....	.....	.....	.....	.....
49	42	.....	.....	N. P.	Cosden & Co.....	.....	.....	.....	.....	.....	.....
2⅜	2⅛	2⅛	2⅛	10	Kansas & Gulf.....	.....	.....	.....	.....	.....	.....
31⅛	40	27	22¾	25	Lone Star Gas.....	40	24½	24½	24½	24½	0
58⅞	45⅝	58	51	50	Manuf. Light.....	387	52⅛	53	52	53	+⅜
45	23¾	59¼	30⅛	N. P.	Marland Oil.....	.....	.....	.....	.....	.....	.....
15⅝	12⅜	12	11¼	N. P.	Middle States.....	.....	.....	.....	.....	.....	.....
23	15⅛	19	11¾	1	Ohio Fuel Oil.....	.....	.....	.....	.....	.....	.....
62	44½	65⅛	30⅛	25	Ohio Fuel Supply...	510	31½	32	31⅛	31½	0
26¾	19	22⅜	18⅝	25	Okla. Nat. Gas....	785	21	22	21	21½	+½
4	2	2⅞	1⅞	5	Okla. Prod. & Ref..	.....	.....	.....	.....	.....	.....
.....	.....	74½	74½	50	Pan-American B....	.....	.....	.....	.....	.....	.....
11	6	10½	6	5	Pittsburgh O. & G..	415	6¼	6¼	6	6⅛	—⅛
65¾	57½	53½	50	13.40	Royal Dutch.....	.....	.....	.....	.....	.....	.....
14⅞	8¾	14	6⅞	10	Salt Creek Cons....	795	7½	7½	7	7½	0
37¾	8	35⅞	32	N. P.	Sinclair Cons.....	.....	.....	.....	.....	.....	.....
47⅞	46½	.....	.....	25	The Texas Co.....	.....	.....	.....	.....	.....	.....
14⅝	10	13½	7	N. P.	Tidal Osage.....	.....	.....	.....	.....	.....	.....
18⅜	9¾	14	10⅛	N. P.	Transcontinental..	.....	.....	.....	.....	.....	.....
25	24½	29½	23¾	25	Union Nat. Gas....	220	28½	28½	28½	28½	0

PITTSBURGH CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Oct. 5 Sales	First	High	Low	Last	Ch'ge
.....	.....	15	15	.....	Central Ky. Gas....	.....	.....	.....	.....	.....	.....
4⅜	1	1½	.80	10	Colombia Synd.....	.....	.....	.....	.....	.....	.....
5	1⅞	2⅛	.40	5	Duquesne Oil.....	.....	.....	.....	.....	.....	.....
.....	.....	87	10	10	Forest Oil.....	.....	.....	.....	.....	.....	.....
.....	.....	1¼	1	1	Grant Oil.....	.....	.....	.....	.....	.....	.....
71	50	68	46½	25	Gulf Oil Corp.....	4,100	51	52⅛	51	52⅛	+1⅛
.12	.02	.03	.02	1	Homer Union.....	.....	.....	.....	.....	.....	.....
.....	.....	24½	16½	N. P.	International Pet..	.....	.....	.....	.....	.....	.....
9	6½	8½	4	10	Marshall Oil.....	.....	.....	.....	.....	.....	.....
.42	.18	.36	.21	1	Mexican Wyoming..	.....	.....	.....	.....	.....	.....
.....	.....	3⅝	3⅝	.....	New Bradford Oil..	.....	.....	.....	.....	.....	.....
1½	1	2⅜	1⅛	.....	Oklahoma Eastern...	240	1⅝	1⅞	1⅝	1⅞	+¼
1¼	1	2	.78	10	Omar Oil & Gas.....	.....	.....	.....	.....	.....	.....
52	29	22½	8	5	States Oil.....	20	9	9	8	8	.....
.....	.....	80	80	100	Southwest Pa. Pipe.	.....	.....	.....	.....	.....	.....
.....	.....	23	23	25	Tropical Oil.....	.....	.....	.....	.....	.....	.....
.09	.03	.05	.03	1	Twin City O. & G..	.....	.....	.....	.....	.....	.....
.06	.03	.....	.....	1	West Texas.....	.....	.....	.....	.....	.....	.....

*New High †New Low xEx Dividend